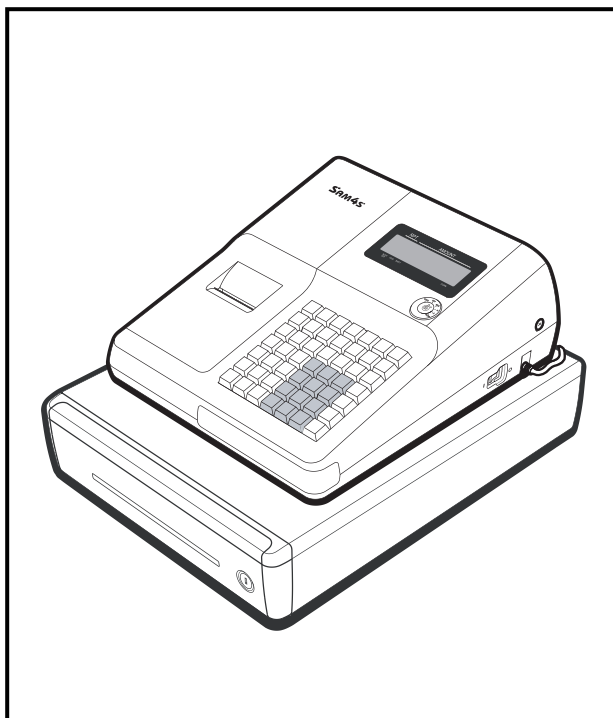


SAM4S

ELECTRONIC CASH REGISTER ER-260 SERIES

SERVICE Manual

ELECTRONIC CASH REGISTER



C O N T E N T S

1. Precaution Statements
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4. Disassembly and Assembly
5. Troubleshooting
6. Exploded Views and Parts List
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
About this Manual


This service manual describes how to perform hardware service maintenance for the SAM4S ER-260 Series Electronic Cash Register.

Notes

Notes may appear anywhere in the manual. They describe additional information about the item.

Precaution symbols

. Indicates a Safety Precaution that applies to this part component.

. Indicates the part or component is an electro-statically sensitive device. Use caution when handling these parts.

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SAM4S ER-260 SERIES

Service Manual First edition.

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Overview of this ECR

This ECR is a microprocessor-based system, using a 8 bits microprocessor.

This service manual provides the technical information for many individual component systems, circuits and gives an analysis of the operations performed by the circuits. If you need more technical information, please contact our service branch or R&D center. Schematics and specifications provide the needed information for the accurate troubleshooting.

All information in this manual is subject to change without prior notice. Therefore, you must check the correspondence of your manual with your machine. No part of this manual may be copied or reproduced in any form or by any means, without the prior written consent of Shin Heung Precision.

Note: Before using this Electronic Cash Register (ECR) for the first time, leave it powered on in the REG mode for at least 24 hours. This allows the MS Lithium battery, which maintains the memory of the ECR while the power is off, to charge completely.



“Proper disposed of batteries is required. Refer to your local codes for disposed requirements.”

1 Precaution Statements

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

1-1 Safety Precautions

1. Be sure that all built-in protective devices are replaced. Restore any missing protective shields.
2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including nonmetallic control knobs and compartment covers.
3. Make sure there are no cabinet openings through which people - particularly children - might insert fingers and contact dangerous voltages.
Such openings include excessively wide cabinet ventilation slots and improperly fitted covers and drawers.
4. Design Alteration Warning:
Never alter or add to the mechanical or electrical design of the SECR. Unauthorized alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer's warranty.
5. Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damage or over- heating, and correct any potential hazards.
6. Observe the original lead dress, especially near the following areas: sharp edges, and especially the AC and high voltage supplies.
Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.
7. Product Safety Notice:
Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original - even if the replacement is rated for higher voltage, wattage, etc.

Components that are critical for safety are indicated in the circuit diagram by shading, () or (). Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

Dispose used batteries according to the manufacturer's instructions.

ATTENTION

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.

Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

1-2 Servicing Precautions

WARNING: First read the-Safety Precautions-section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precautions.

WARNING: An electrolytic capacitor installed with the wrong polarity might explode.

1. Servicing precautions are printed on the cabinet. Follow them.
2. Always unplug the units AC power cord from the AC power source before attempting to:
 - (a) Remove or reinstall any component or assembly
 - (b) Disconnect an electrical plug or connector
 - (c) Connect a test component in parallel with an electrolytic capacitor
3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.
5. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels and input terminals).
6. Insulation Checking Procedure:

Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of AC plug.

The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 mega ohm.
7. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
8. Always connect an instrument's ground lead to the instrument chassis ground before connecting the positive lead ;
Always remove the instrument's ground lead last.

1-3 Precautions for Electrostatic Sensitive Devices (ESDs)

1. Some semiconductor (solid state) devices are easily damaged by static electricity. Such components are called Electrostatic Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.
2. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power - this is an electric shock precaution.)
3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.
4. Do not use freon-propelled chemicals. These can generate electrical charges that damage ESDs.
5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.
6. Use only an anti-static solder removal device. Many solder removal devices are not rated as anti-static; these can accumulate sufficient electrical charge to damage ESDs.
7. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
9. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

2 Product Specifications

Specifications are correct at the time of printing. Product specifications are subject to change without notice. See below for product specifications.

2-1 Specifications

Item	Description	Remark
Processor	WINBOND CPU W78C438 (8-Bit)	
Memory	<ul style="list-style-type: none"> RAM <ul style="list-style-type: none"> SRAM (K6T1008C2E) : 1MBITs (Default) SRAM (K6T4008C2E) : 4MBITs (Option) ROM <ul style="list-style-type: none"> EPROM(27C2001) : 2MBITs (Default) FISCAL ROM <ul style="list-style-type: none"> EPROM(27C1001) : 1MBITs (Default) EPROM(27C2001) : 2MBITs (Option) 	
Battery	<ul style="list-style-type: none"> Type : MS Lithium, 3.0V 11mAh Part Name : MS920S Charging Time : 24 Hours Life : 3 Years 	
Data Storage	<ul style="list-style-type: none"> 60 Days 	When battery is Full charged
Interface Serial (RS-232C)	<ul style="list-style-type: none"> Flow Control : <ul style="list-style-type: none"> ① DTR / DSR : H/W Flow Control Baud Rate : 9600 Bps Connector : DB9P Female (I/F PBA) Voltage Supply : VCC(+5V/150mA) supplies at 9Pin of Connector. 	
Printer	<ul style="list-style-type: none"> Model : LTP8235 (SII) Print Speed : 30mm/Sec, 8Line/Sec Type : Thermal Dot Line Printing Resolution : 150 dpi (6 Dot) Paper End Sensor (Photo Sensor) 	Detail Spec refer to Next Page
Display	<ul style="list-style-type: none"> Operator Display : 10 Digits VFD or LCD(16 * 2Line Character Type) Customer Display : 10 Digits VFD (Option) 	
Keyboard	<ul style="list-style-type: none"> 49-Key (Raised Type): ER-260 49-Key (Flat Type) : ER-265 	
Drawer	3B4C / 4B4C	Small Drawer
	5B5C / 4B8C / 7B8C	Middle Drawer
Power Consumption	<ul style="list-style-type: none"> Regularity : Approx. 20W 	
Power Requirement	<ul style="list-style-type: none"> AC 120V 60Hz, 230V 50Hz 	
Environment Condition	<ul style="list-style-type: none"> Temperature : 0℃ ~ 45℃ humidity : 30% ~ 80% RH 	
Dimensions(mm)	<ul style="list-style-type: none"> 325(W) X 420(D) X 226(H) 	With Small Drawer
Weight	<ul style="list-style-type: none"> 7.4 Kg (Set Only), 8.6Kg (with Packing) 	With Small Drawer

Table2-1 General Specifications

2-2 Dimensions

2-2-1 Appearance Dimensions (mm)

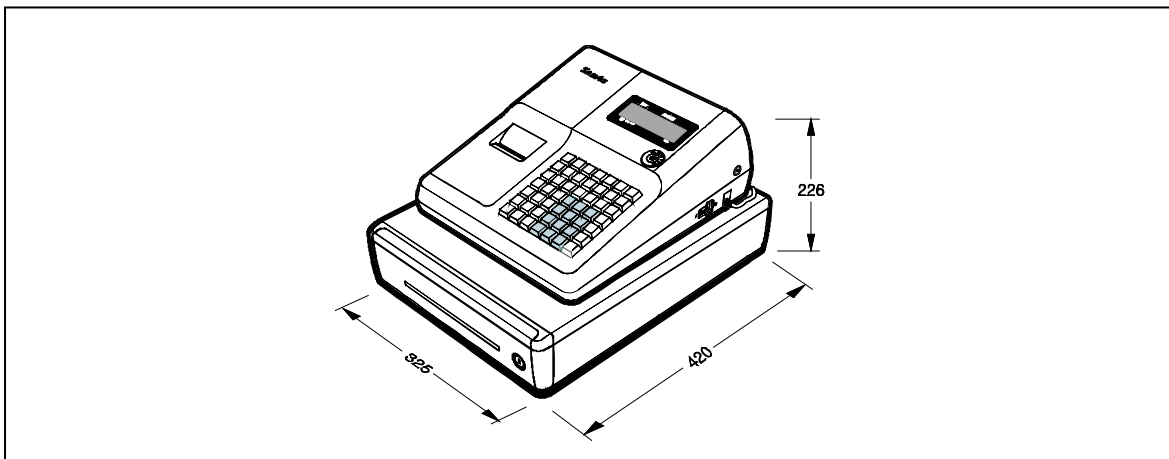


Figure2-1 Dimensions

2-2-2 Location Feature

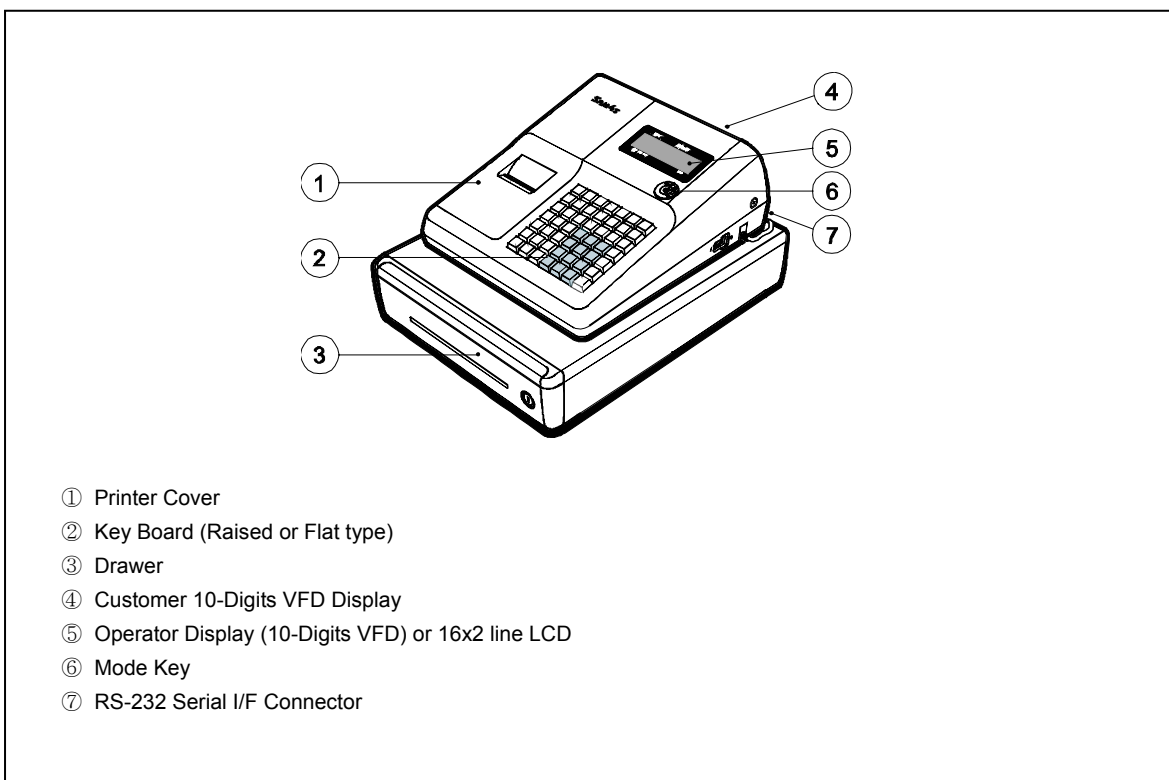


Figure2-2 Location Feature

2-3 Printer Specification

2-3-1 Printer Specification

Item		Description	Remark
Model		• LTP8235(SII)	
Print Method		• Thermal Dot Line Printing	
Printing Format	Total Number of Dots	• 288 Dots	
	Dot Pitch	• Vertical : 0.169 mm • Horizontal : 0.169 mm	
Printing Speed		• 30mm/Sec, 8Line/Sec	
Printing Direction		• Unidirectional friction feed	
Paper Feeding	Feeding Method	• Friction Feed	
	Minimum Feed Pitch	• 0.169 mm	
	Feeding Speed	• 30 mm/Sec (At 6V of Motor Voltage)	
Power Supply Volt	Power Voltage	• 6.0V (Recommend)	Head/Motor
	Circuit Input Voltage	• 5V	Head Control/Sensor
Printer Head	Heat Element Density	• 6 Dots/mm (0.169 mm/Dot)	
	Total Head Elements	• 288 Dots/Dot Line	
	Available Printing Width	• 48 mm	
Line Feed Motor		• 4-Phase Bi-Polar Stepping Motor	
Sensor	Head Temperature	• Thermistor	
	Paper-End Sensor	• Reflecting Photo Sensor	
Reliability	Life	• 50km / 5×10^7 pulse	
Dimension (mm)		• 38.0 (W) × 72.0 (D) × 15.6 (H)	
Weight		• Approx. 50 g	

Table2-2 Thermal Printer Specification

2. Product Specifications

2-3 Thermal Printer Specifications

2-3-2 Paper Specification

Item	Description	Remark
Paper Type	• Single-ply Thermal Paper Roll	
Paper Size	• 57.5 mm ± 0.5 mm (Width) × Ø 70 mm or less	

Table2-3 Paper Specifications

2-3-3 Character Specification

Item	Description	Remark
Character Structure	• 8(W) × 17(H) Font (Including a horizontal)	
Character Size	• 1.33 mm(W) × 2.83 mm(H)	
Column Pitch	• 1.5 mm	
Line Pitch	• 3.67 mm (Including 5-dot line spacing)	
Number of Column	• 32 (8 × 17 Dots/Character)	

Table2-4 Character Specification

2-4 Power Specification

Item	Description	Remark
Input Voltage & Current	• U.S.A : AC 120V, 60Hz (Min : 102V, Max : 138V) • Europe : AC 220V/240V, 50Hz (Min : 195.5V, Max : 264.5V)	Max & Min : ± 15%
Power Consumption	• Regularity : Approx. 20W	
Output Voltage	• AC 19V 2.3A (Wire Color : Blue-Blue) • AC 24V 0.15A (Wire Color : Red-Red)	Power Transformer Output

Table2-5 Power Specification

2-5 Interface Specification

2-5-1 RS-232C Serial Interface

2-5-1-1 Specification

Item	Description	Remark
Data Transmission	• Serial	
Synchronization	• Asynchronous	
Hand Shaking (Flow Control)	• H/W : DTR / DSR	
Signal Level	• Logic"1" (MARK) : -3V ~ -15V • Logic"0" (SPACE) : +3V ~ +15V	
Baud Rate	• 9600 bps	
Data Word Length	• 8 Bit	
Parity	• None	
Connector	• DB9P Female (I/F PBA Side)	
Voltage Supply	• VCC(+5V/150mA) is supplied at 9Pin of D-SUB Connector.	For Bar Code Reader or other devices

Table2-6 RS-232C Specification

2-5 Interface Specification

2-5-1-2 Cable Connection

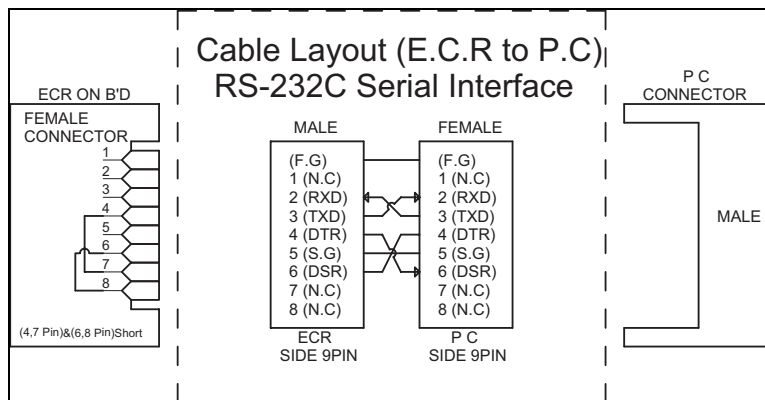


Figure2-3 RS232C Cable Connection (9Pin to 9Pin)

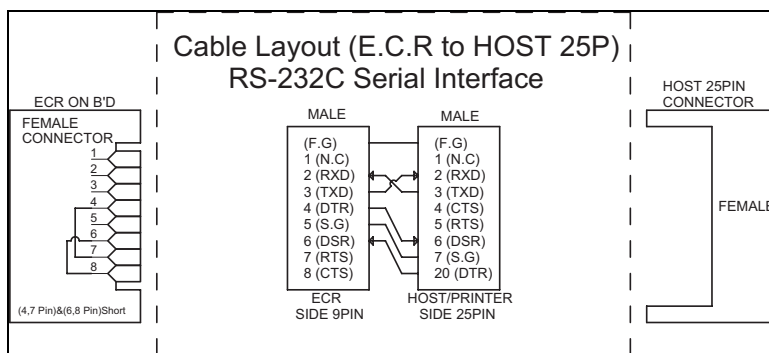


Figure2-4 RS232C Cable Connection (9Pin to 25Pin)

2-5 Interface Specification

2-5-1-3 Signal Description

Pin No.	Signal Name	Signal Direction	Function
BODY	Frame GND	-	Frame Ground
2	RXD	Input	Receive Data
3	TXD	Output	Transmit Data
4	DTR	Output	This Signal indicates whether the ECR(ER-260) is busy. (H/W flow control) ① MARK(Logic1) : The ECR is busy ② SPACE(Logic0) : The ECR is not busy ③ The host transmits a data to the ECR, after confirming this signal.
5	Signal GND	-	Signal Ground
6	DSR	Input	This signal indicates whether the host computer or receipt printer can receive data. (H/W flow control) ① MARK(Logic1) : The host can receive a data. ② SPACE(Logic0) : The host can not receive a data ③ The ECR transmits a data to the host or receipt printer, after confirming this signal.
9	VCC	Output	VCC(+5V/150mA) is supplied at 9Pin of D-SUB Connector.

Table2-7 RS-232C Signal Description

Caution: The VCC is supplied for the barcode or device power source. If the Total Power Consumption of the attached devices is exceeded the specification(150mA), the system stops the VCC of D-SUB Connector

2-5-1-4 H/W Flow Control Timing

When DTR/DSR flow control is select, before transmitting a data, the ECR checks whether the host is BUSY or not.

If the host is BUSY, ECR does not transmit a data to the host. If the host is not BUSY, ECR transmits a data to the Host.

The host is the same.

MEMO

3 Installation and Operation

3-1 System Configuration

3-1-1 Configuration

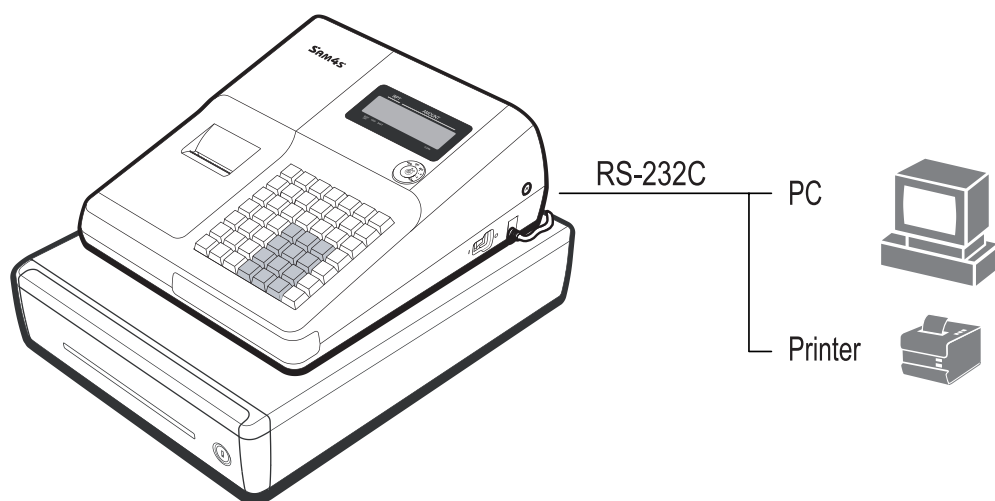


Figure 3-1. System Configuration

3-2 Installation

3-2-1 Paper Roll Installation

1. Remove the printer cover.(Fig 3-2 (A))
2. For proper feeding through the print head, cut or tear a straight even edge on the end of the paper roll.
(Be sure to remove any paper with glue residue.) Place the paper roll in the paper holder so that the paper will feed from the bottom of the roll.(Fig 3-2 (B))
3. Insert the end of the paper into the paper slot.(Fig 3-2 (C))
4. Close the paper lever. (ER-260 Series is possible to feed automatically when you rock the paper levers and insert paper.). (Fig 3-2 (D))
5. Replace the printer cover.(Fig 3-2 (E))

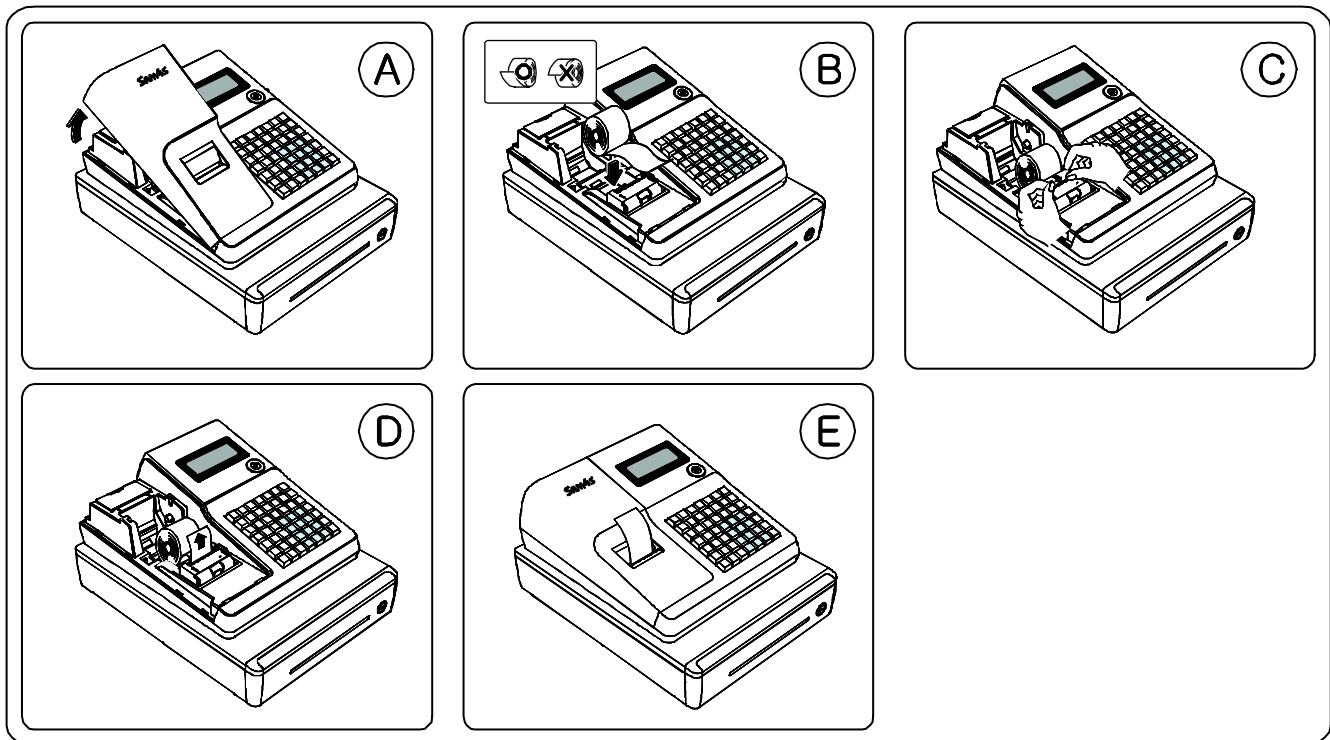


Figure 3-2. Paper Installation

3-2 Installation

3-2-2 Take-Up Spool Installation

※ If you wish to use the printer to print a sales journal, insert the paper into the paper take-up spool. Wind the paper two or three turns around the spool shaft and install the spool in the mount

1. If you use the ER-260 Series with 1-station, refer to below figure. (Fig 3-3 (F))
2. If you use the ER-260 Series with 2-stations, refer to below figure. (Fig 3-3 (G))

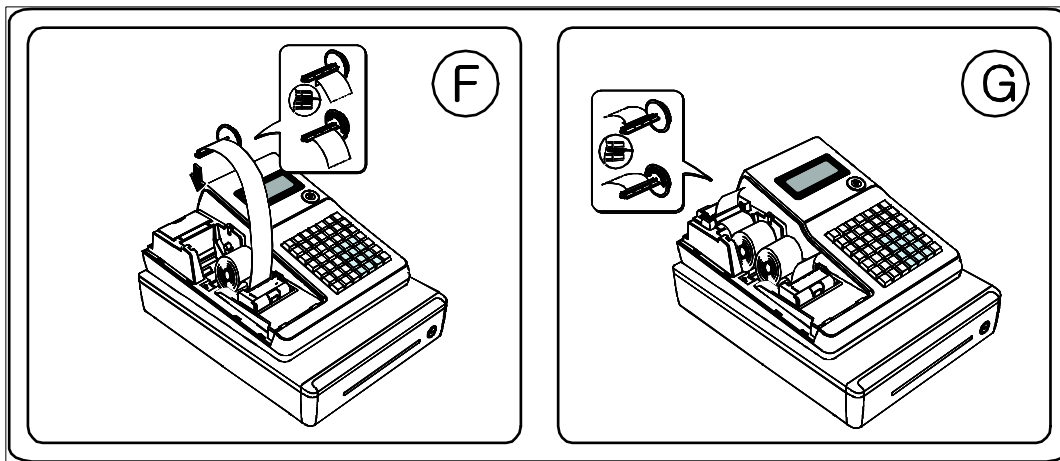


Figure 3-3. Spool Installation

3-2 Installation

3-2-3 RS-232C Serial Cable Installation

1. Open the I/F Door.
2. Connect the RS-232C serial cable to the RS-232C serial port on the rear side of ECR.
3. Secure the serial cable with screws.
4. Connector the other end of the RS-232C serial Cable to your host computer.

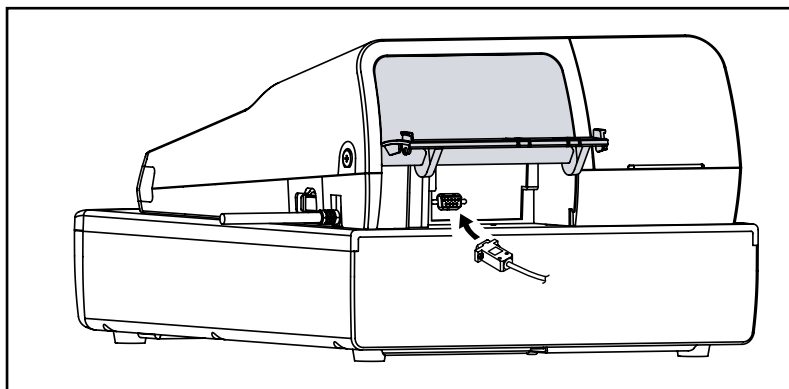


Figure 3-4. Cable Installation

3-2-4 Options

No.	Item	Description	Remark
1	Water Proof	Raised Keyboard (Option) Flat Keyboard (Default)	
2	Memory	SRAM 4MBITs (4MBITs * 1)	On Main PBA
3	Rear Display	VFD 10digit	Factory option
4	Pulley Winding	Spool motor & Pulley	Factory option

Table 3-1. Option

3-2-5 Supplies

No.	Item	Description	Remark
1	Paper Roll	1 EA	
2	Mode Key	VD, REG, X, Z, P, C : NON FISCAL REG, X, Z, P, C : FISCAL	
3	User Manual	1 EA	
4	Spool	1 EA	

Table 3-2. Supplies

3-3 Operation

Note: Before using this Electronic Cash Register (ECR) for the first time, leave it powered ON in the REG mode for a at least 24 hours. This allows the Ms-Lithium battery, which maintains the ECR's memory while the power is OFF, to fully charge.

3-3-1 Mode Switch

The position of the Mode Key determines the action of the ECR. The modes are as shown in Table 3-3

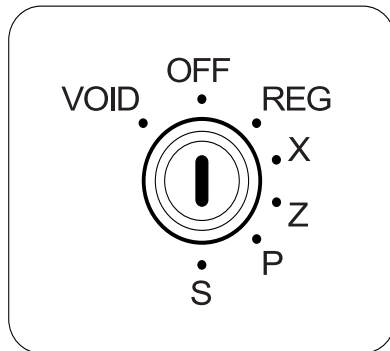


Figure3-5 Mode Switch

Mode	Key	Function
VOID	VD	Use to void (correct) items outside of a sale.
OFF	-	The Register is inoperable.
REG	REG	Use for normal registrations.
X	X	Use to read register reports and perform other manager functions.
Z	Z	Use to read register reports and reset totals to zero.
PGM	P	Use to program the register
S	C	Use for H/W tests and special setting.

Table3-3 Mode Switch Function

The mode switch can be used to access the following key lock positions.

Mode	Accessible Position	Remark
VOID	Void, Off, Register(REG), Manager(X)	
REG	Off, Register(REG)	
X	Off, Register(REG), Manager(X)	
Z	Off, Register(REG), Manager(X), Clear Totals(Z)	
PGM	Void, Off, Register(REG), Manager(X), Clear Totals(Z), Program(P)	
S	Void, Off, Register(REG), Manager(X), Clear Totals(Z), Program(P), Service Mode(S)	

Table3-4 Key Function

Note : The Key can be removed from the key lock in the OFF or REGISTER position.

3-3 Operation

3-3-2 Key Board Matrix

1) 1-station model

PAPER FEED	ADD CHECK	TAX	#/NS	CLERK	RA	PO
-	-%	+%	C/CONV	RETURN	VOID	CANCEL
1	6	11	CLEAR	X/TIME	PLU	CHARGE
2	7	12	7	8	9	CHECK
3	8	13	4	5	6	SUB TOTAL
4	9	14	1	2	3	CASH / TEND
5	10	15	0	00	.	

Figure 3-6. 1-Station Model Key Board

2) 2-station model

PAPER FEED	DETL FEED	TAX	#/NS	CLERK	RA	PO
-	-%	+%	C/CONV	RETURN	VOID	CANCEL
1	6	11	CLEAR	X/TIME	PLU	ADD CHECK
2	7	12	7	8	9	CHARGE
3	8	13	4	5	6	CHECK
4	9	14	1	2	3	SUB TOTAL
5	10	15	0	00	.	CASH/ TEND

Figure 3-7. 2-Station Model Key Board

3-3 Operation

3-3-3 Initial Clear

1. Unplug the register.
2. Turn the control lock to the “S” position.
3. Press and hold the key position where the “**CASH**” key is located on the default keyboard layout.
4. While continuing to hold the “**CASH**” key, plug the register into a power source.
5. The message “***** INITIAL CLEAR *****” prints when the initial clear is complete.

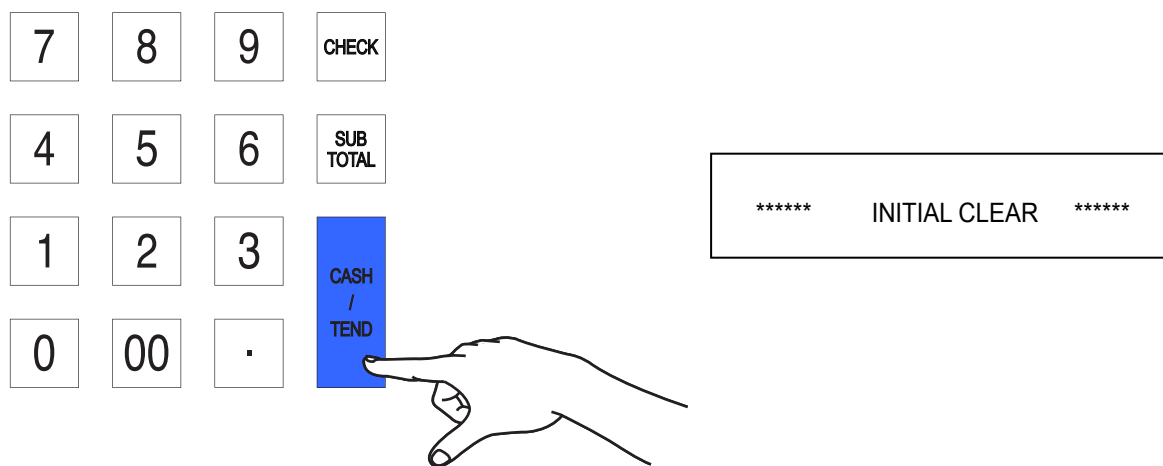


Figure3-8. Initial Clear Key & Print Sheet(ER-260)

3-3 Operation

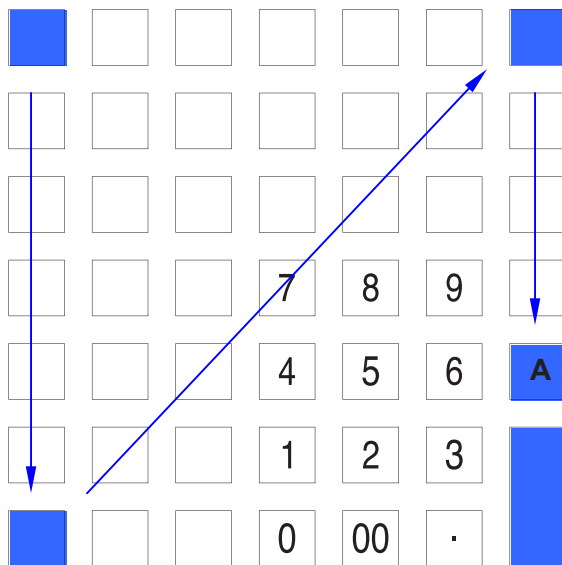
3-3-4 All Clear

This step insures that the cash register is cleared of any totals or programming. After this procedure, the cash register is ready for programming and operation.

WARNING: This is a one time procedure. Do not repeat this procedure after the cash register is programmed, it causes all programs and totals to be erased and to be default.

Note : Service Mode is not marked in a mode painting part.
Service Mode spins the Mode Key once just in a Program Mode to the right direction.
And need “ C ” key to execute a Service Mode.

1. Unplug the register.
2. Turn the control lock to the “S” position.
3. Press and hold the key position where the “A” key is located on the default keyboard layout.
4. Continue to hold the “A” key while plugging the register into a power source.
5. Press the upper left key of the keyboard, then the lower left key, then the upper right key, and finally press the lower right key.



```
*****
*          RAM ALL CLEAR OK !          *
*****

ER-260 EPROM INFO.
VERSION   : STD
CHECKSUM  : d2e1
SRAM SIZE : 1Mbits
SEP  08 2006

17:55                                01-09-2006
000001                                00
```

Figure3-9. All Clear Key Sequence & Print Sheet

3-3 Operation

3-3-6 Self Test

3-3-6-(a) Test Printer

1. Turn the Mode switch to Service Mode position.
2. Press '1', '0' and '**SUB TOTAL**' key on key board.
3. Then the printer prints the test pattern.
4. After printing, The drawer is opened. Then the printer test is finished.

3-3-6-(b) Test Display

1. Press '1', '1' and '**SUB TOTAL**' key on key board.
2. Then the buzzer will work for 1 sec.
3. After testing the buzzer, Some characters are displayed on the rear VFD display

3-3-6-(c) Test Key Board

1. Press Press '1', '2' and '**SUB TOTAL**' key on key board.
2. Press any key you want on the key board.
3. The key code of pressed key will be showed on the VFD.
4. Turn the mode switch to any position to finish this test.

3-3-6-(d) Test Mode Switch

1. Press Press '1', '3' and '**SUB TOTAL**' key on key board.
2. Turn the mode switch to any position.
3. The corresponding Mode name will be showed on the VFD.

3-3-6-(e) Test RS232C

1. Install the serial loop back test jig. (Short "pin 2 , 3" , " pin 4 , 6") of DSUB connector.
2. Press Press '1', '4' and '**SUB TOTAL**' key on key board.
3. If error occurs, the message (232 NOGOOD) is displayed on VFD and the Buzzer beep. Then Press "**Clear**" key.

Note : When the ports is unconnected the cable , the Error occur.

MEMO

4 Disassembly and Assembly

Caution :

- Before installation, be sure to turn off the power switch.
- Use gloves to protect your hand from being cut by the angle and the chassis.
- Connect all the cables correctly. When connecting or disconnecting the cables, be careful not to apply stress to the cables. (It may cause disconnection)
- Be careful not to bind interface cables and AC power cord together.

Note : Before disassembling, first of all separate the ASS'Y CASE UPPER(B) from the ASS'Y CASE LOWER(E)

4-1 Disassembling the Case Upper Block

4-1-1 Ass'y Case Upper

1. Open the ASS'Y COVER PRINTER(A) and lift it off. (Page6-1, 6-2)
2. Remove the three screws(B11 : 2pcs, B-15 : 1pcs) from the ASS'Y CASE LOWER(E). (Page6-1,6-3,6-8)
3. Separate the five harnesses(㉔,㉕,㉖,㉗,㉘or㉙) from the PBA-MAIN BOARD(E-17). (Page6-3,6-8)
4. Lift off the ASS'Y CASE UPPER(B) from the ASS'Y CASE LOWER(E). (Page6-1,6-3,6-8)

4-1-2 Ass'y Front Display (VFD)

1. Separate the PBA DISPLAY FRONT & REAR(B33) from the ASS'Y CASE UPPER (B). (Page6-3)
2. Separate the two harnesses(㉚,㉛) from the PBA DISPLAY FRONT & REAR (B33).(Page6-3)
3. Separate the PMO-WINDOW VIEW_VFD(B8) from the ASS'Y CASE UPPER (B). (Page6-3)

4-1-3 Ass'y Front Display (LCD)

1. Separate the LCD ASS'Y (B34) & PBA DISPLAY(B32) from the ASS'Y CASE UPPER (B). (Page6-3)
2. Separate the two harnesses(㉜,㉝) from the PBA DISPLAY(B32).(Page6-3)
3. Separate the LABEL-SHEET(B39) from the LCD ASS'Y(B34).(Page6-3)
4. Separate the PMO-WINDOW VIEW_LCD(B9) from the ASS'Y CASE UPPER (B). (Page6-3)

4-1-4 Ass'y Journal(Rear) Printer

1. Separate the CAP-PRINTER(B2) and Remove the two screws(B3) from the ASS'Y CASE UPPER (B). (Page6-3)
2. Separate the JOURNAL PRINTER(B5) & HARNESS GND(B38), REAR LEVER-LOCK(B4). (Page6-3)
3. Separate the harness(㉞) from the PBA-JOURNAL(B28). (Page6-3)
4. Remove the two screws(B29) and Separate the PBA-JOURNAL(B28) from the ASS'Y CASE UPPER (B). (Page6-3)
5. Separate the harness(㉟) from the PBA-JOURNAL(B28) . (Page6-3)

4-1 Disassembling the Case Upper Block

4-1-5 Ass'y Receipt(Front) Printer

1. Remove the two screws(B20) and Separate the PBA-JOINT(B19) from the HOLDER-PRINTER (B16). (Page6-3)
2. Separate the three harnesses(Ⓐ,Ⓑ,Ⓒ) from the PBA-JOINT(B19). (Page6-3)
3. Remove the four screws(B17) and Separate the HOLDER-PRINTER (B16).from the ASS'Y CASE UPPER (B). (Page6-3)
4. Separate the CAP-PRINTER(B2) and Remove the two screws(B3) from the ASS'Y CASE UPPER (B). (Page6-3)
5. Separate the RECEIPT PRINTER(B5) & HARNESS GND(B6), FRONT LEVER-LOCK(B4). (Page6-3)

4-1-6 Ass'y Spool Motor

1. Separate the harness(Ⓓ) of the MOTOR DC (B-25) from the PBA DISPLAY FRONT(B33) or PBA DISPLAY(B32). (Page6-3)
2. Separate the RCT MOTOR(B24) & MOTOR DC(B25) from the HOLDER-MOTOR(B23). (Page6-3)

4-1-7 Ass'y Keyboard

1. Separate the three harnesses(Ⓜ,Ⓝ,Ⓚ) from the SWITCH-ROTARY(B30) & PBA MAIN(E17)(Page6-3)
2. Remove the four screws(B37) and Separate the ASS'Y KEYBOARD(B35 or B36) from the ASS'Y CASE UPPER (B). (Page6-3)

4-2 Disassembling the Case Lower Block

4-2-1 Ass'y Main PBA, Fiscal PBA and I/F PBA

1. Separate the ten harnesses(㉔,㉕,㉖,㉗,㉘,㉙,㉚,㉛,㉜or㉝,㉞or㉟) and remove the two screws(E16).
2. Lift up the PBA-MAIN PBA(E17) from the CASE LOWER(E24).(page6-8)
2. Lift up the ASS'Y FISCAL PBA(E27) from the CASE LOWER(E24).(page6-8)
3. Separate the harness (㊱) and Remove the screw(E12). (page6-8)
4. Lift up the I/F PBA(E13).(page6-8)

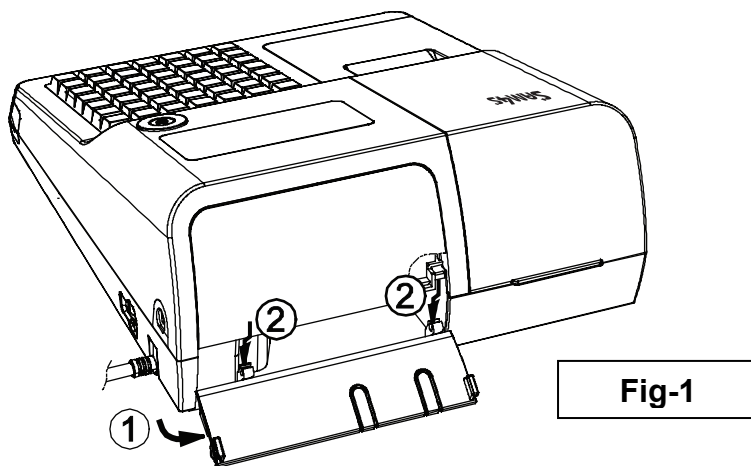
4-2-2 Ass'y Trans Power

1. Separate the harnesses(㉞,㉟) and Remove the two screws(E14). (page6-8)
2. Lift up the TRANS-POWER (E15) from the CASE LOWER(E24).(page6-8)

4-3 Advice as Disassembling

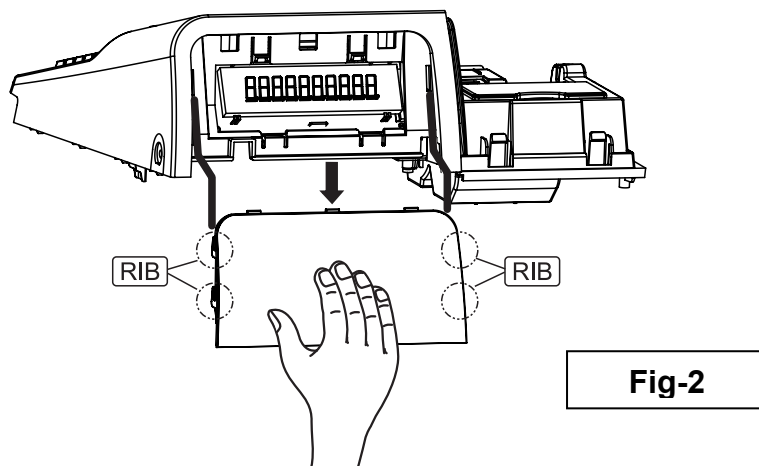
4-3-1 Disassembly of the Door Interface

- Rotate it as ① of the Fig-1 and pull out in the direction of ② to separate from ASS'Y CASE UPPER.



4-3-2 Disassembly of the Window Rear

- ① Be sure to separate the ASS'Y CASE UPPER from the ASS'Y CASE LOWER.
- ② Pull the WINDOW REAR out as the Fig-2 carefully not to break the four ribs.



4-3 Advice as Disassembling

4-3-3 Disassembly of the Rear VFD PCB

- ① Be sure to separate the ASS'Y CASE UPPER from the ASS'Y CASE LOWER.
- ② pull out in the direction of the Fig-3 to separate the REAR VFD PCB from the ASS'Y CASE UPPER.

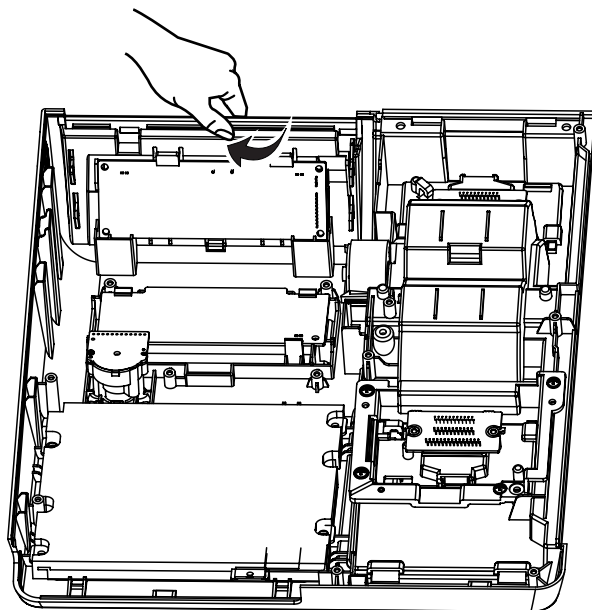
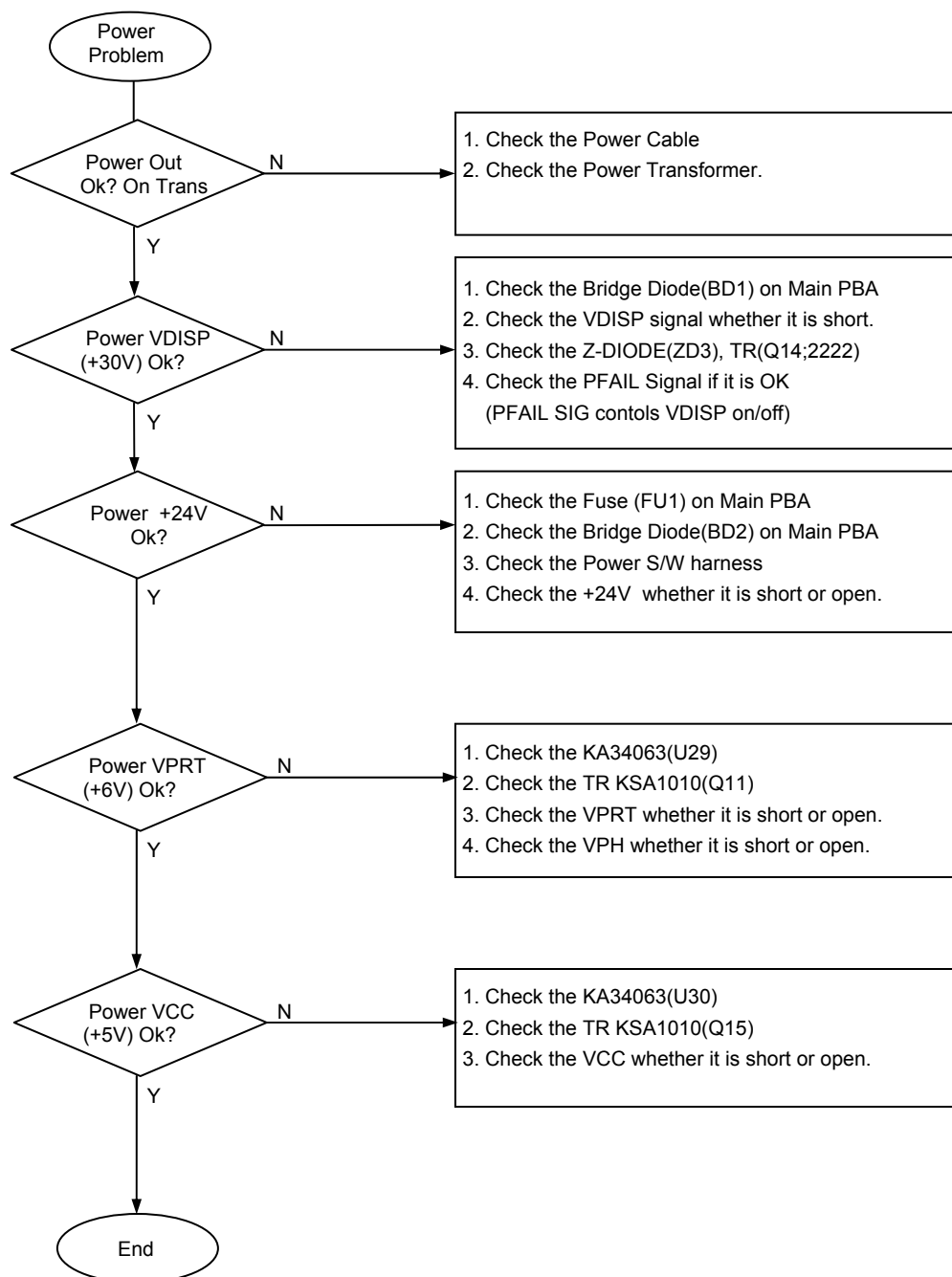


Fig-3

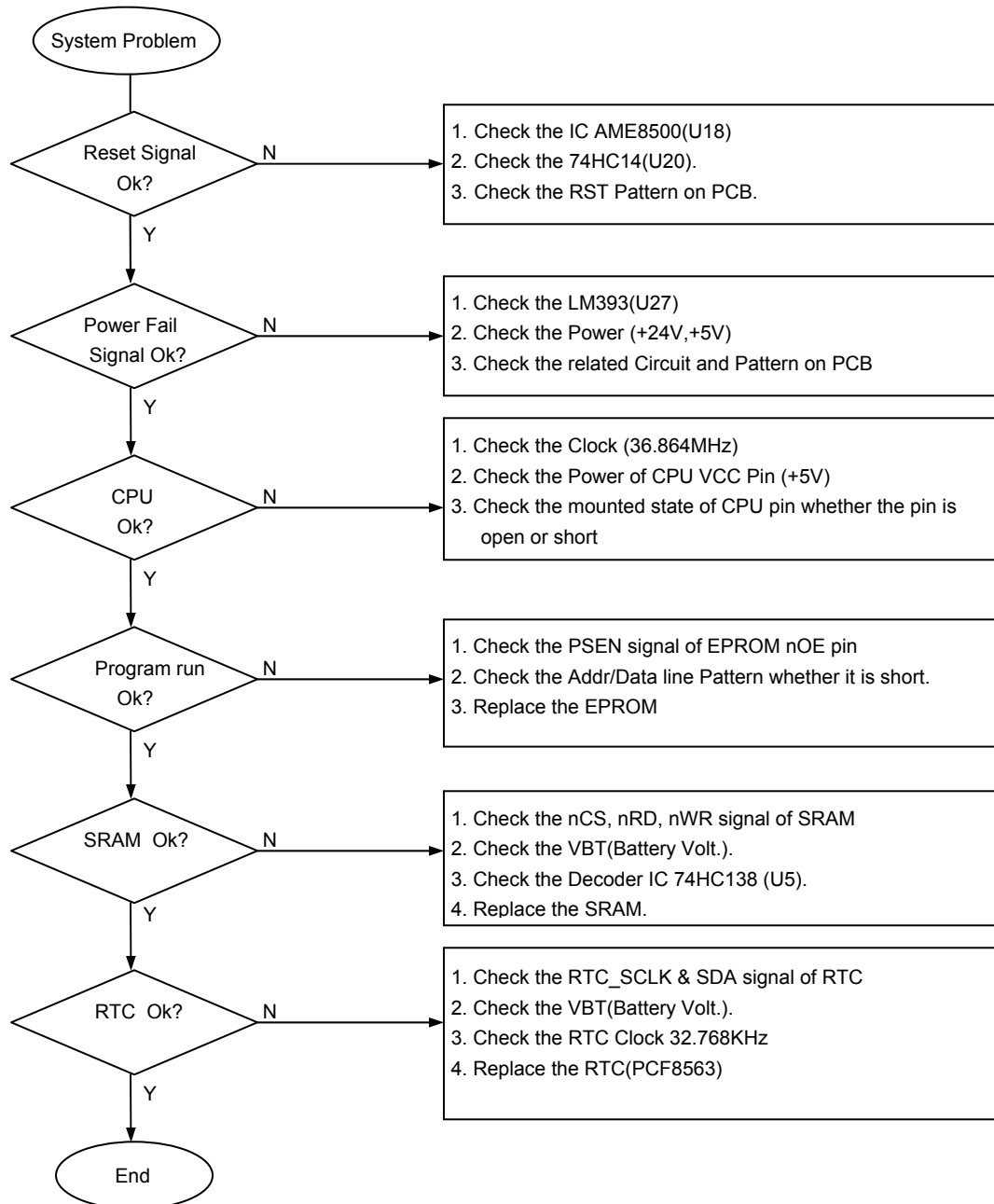
MEMO

5 Troubleshooting

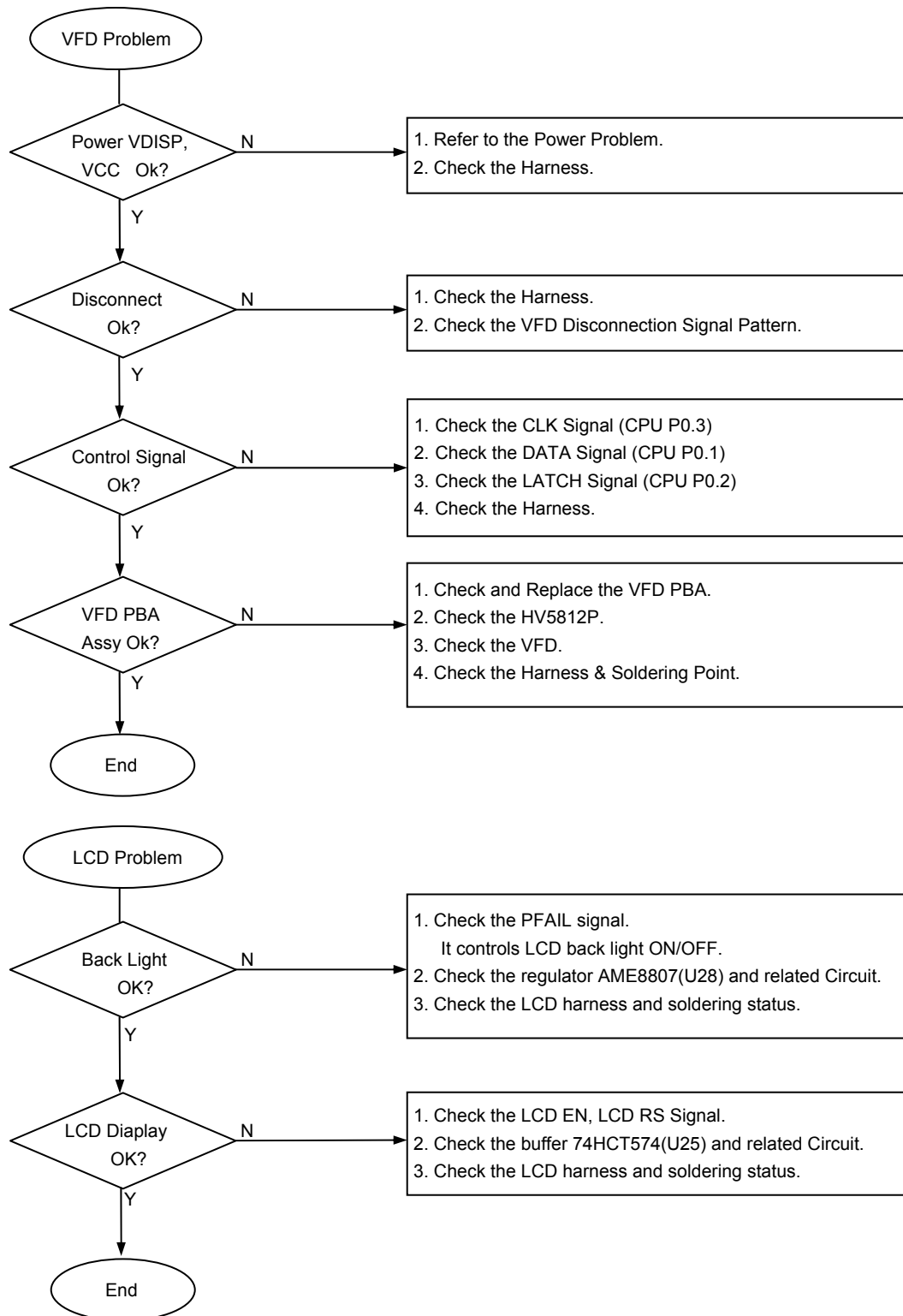
5-1 Troubleshooting



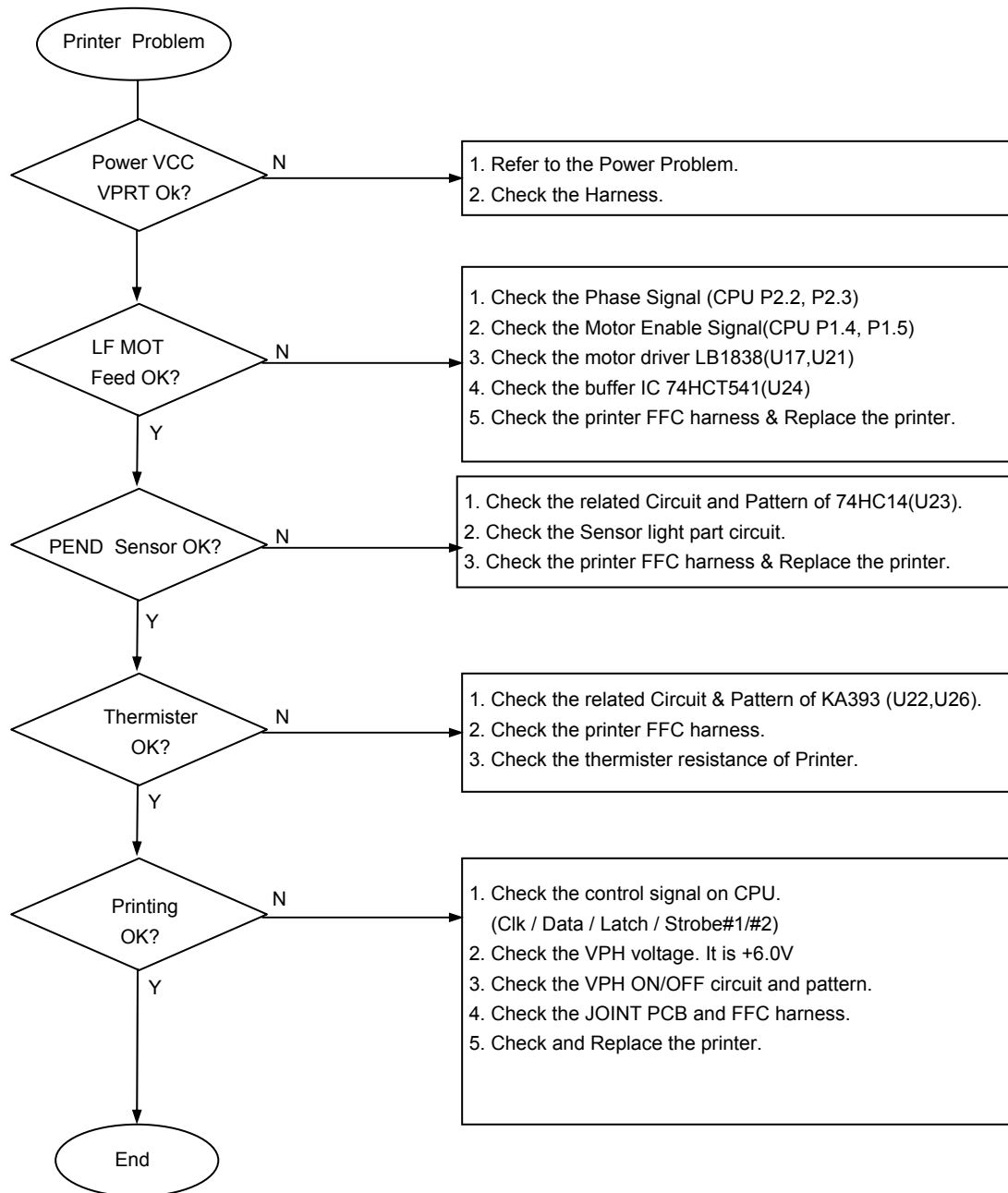
5-2 System Problem



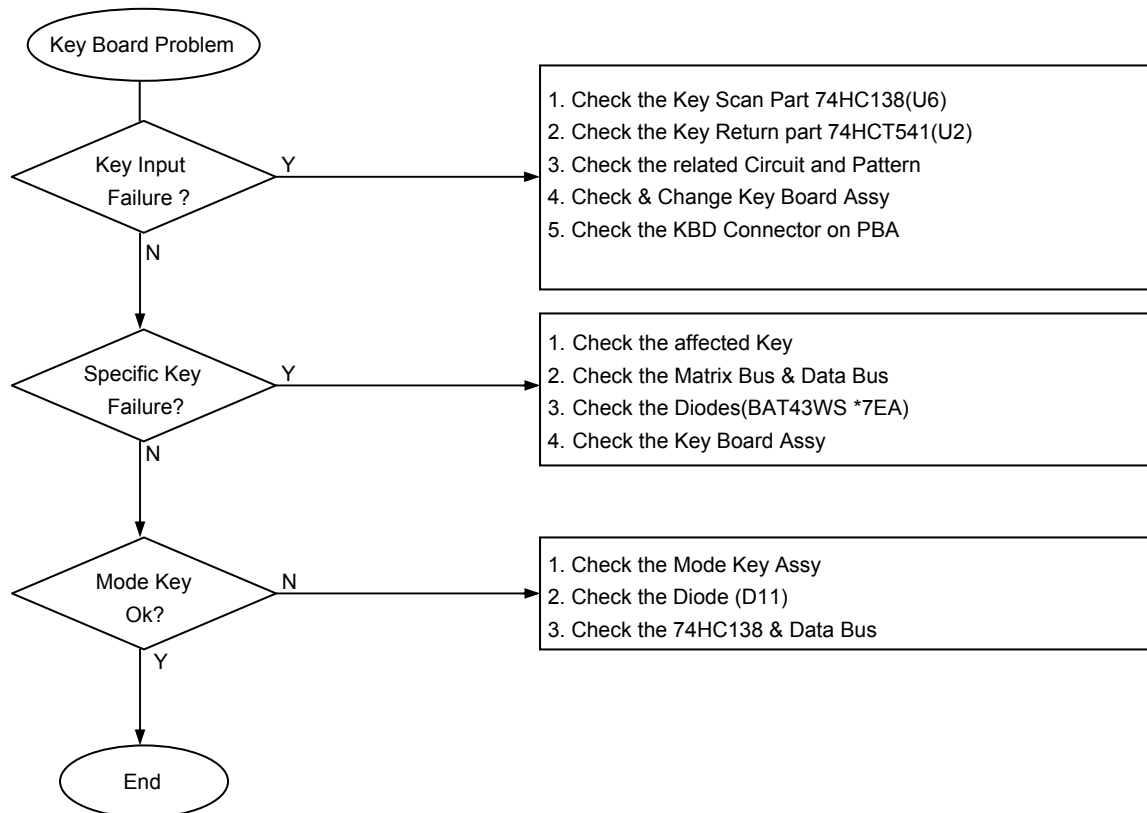
5-3 VFD & LCD Display Problem



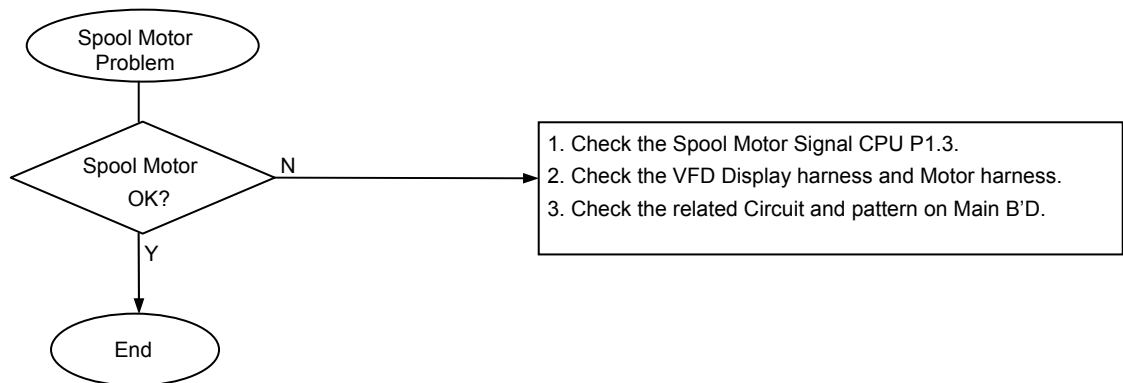
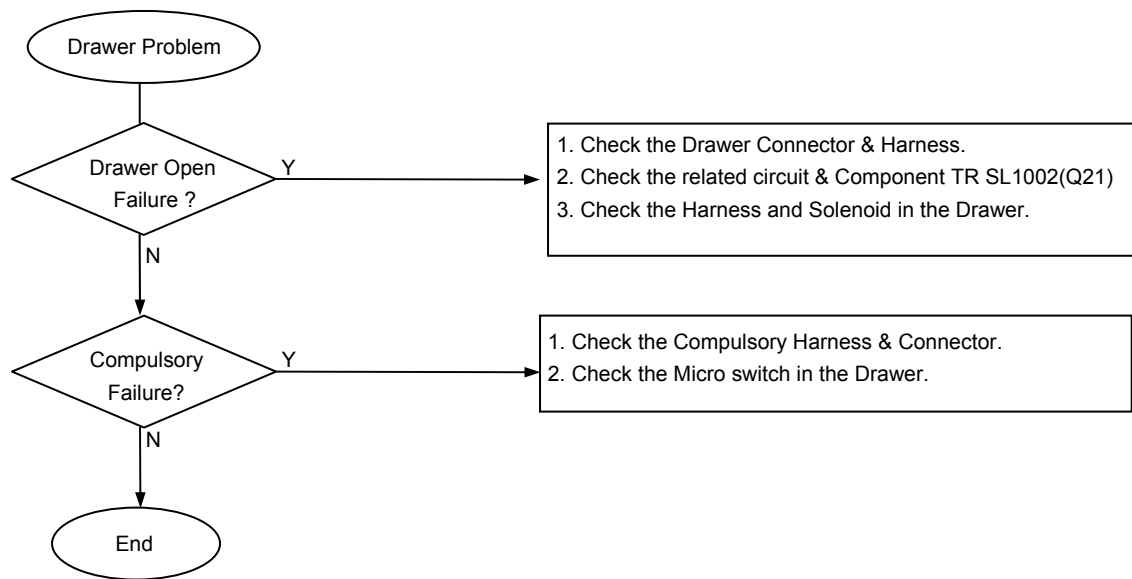
5-4 Thermal Printer Problem



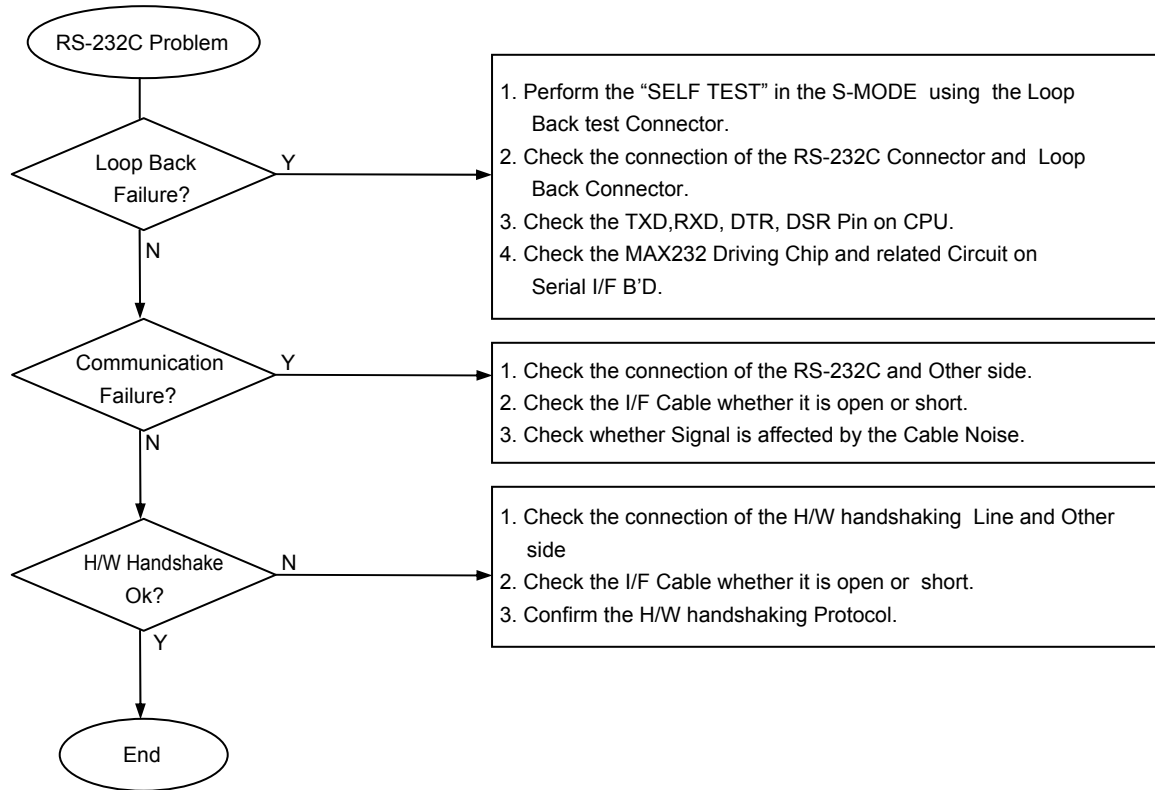
5-5 Key Board Problem



5-6 Drawer & Spool Motor Problem



5-7 Serial I/F Problem



5-7 Error Code

Error Code	Description	Remark
E1	Input Error	
E3	Printer Error (paper jam)	
E4	Non Add # required	
E5	Cash Declaration required	
E6	Cash Drawer is open	
E8	No Paper	

6 Exploded Views and Parts List

6-1 Main Set

[Exploded View]

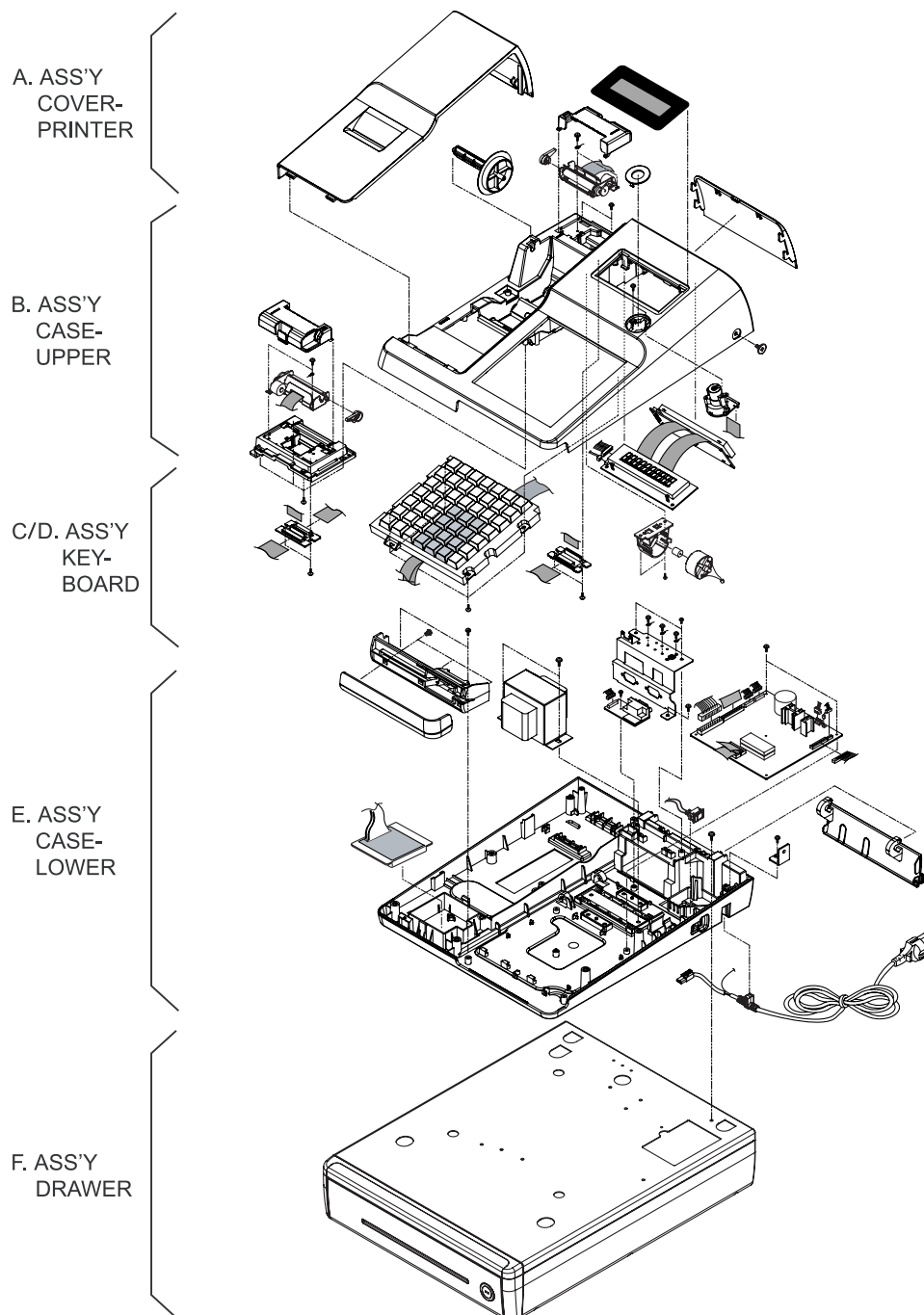


Figure6-1 Total Disassembly (ER-260)

6-1 Main Set

A. ASS'Y COVER-PRINTER

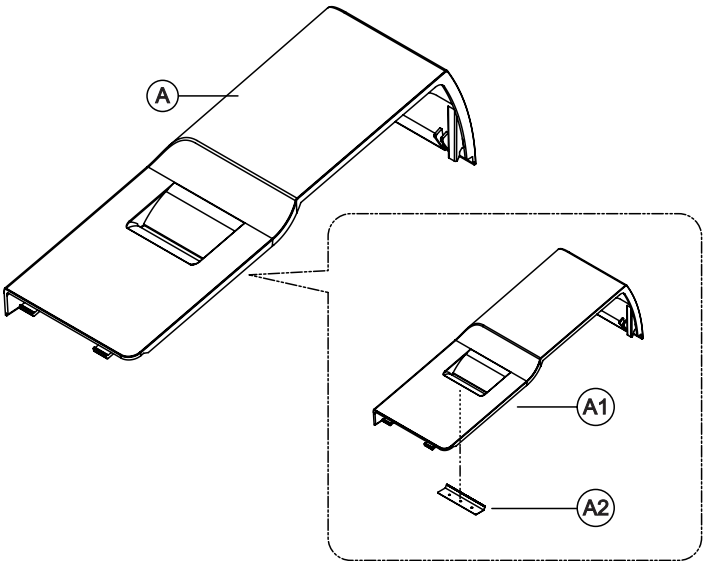


Figure 6-2. ASS'Y COVER-PRINTER

6.1. A. ASS'Y COVER-PRINTER

No.	Code No.	Description/ Specification	Q'ty	Design-Location	Serviceable	Remark
A	JK97-20056B	MEA COVER-PRINTER:ER-260B	1		Y	
A1	JK72-20225B	PMO-COVER PRINTER	1		N	
A2	JK70-10320A	IPR-CUTTER PAPER	1		N	

6-1 Main Set

B. ASS'Y CASE-UPPER

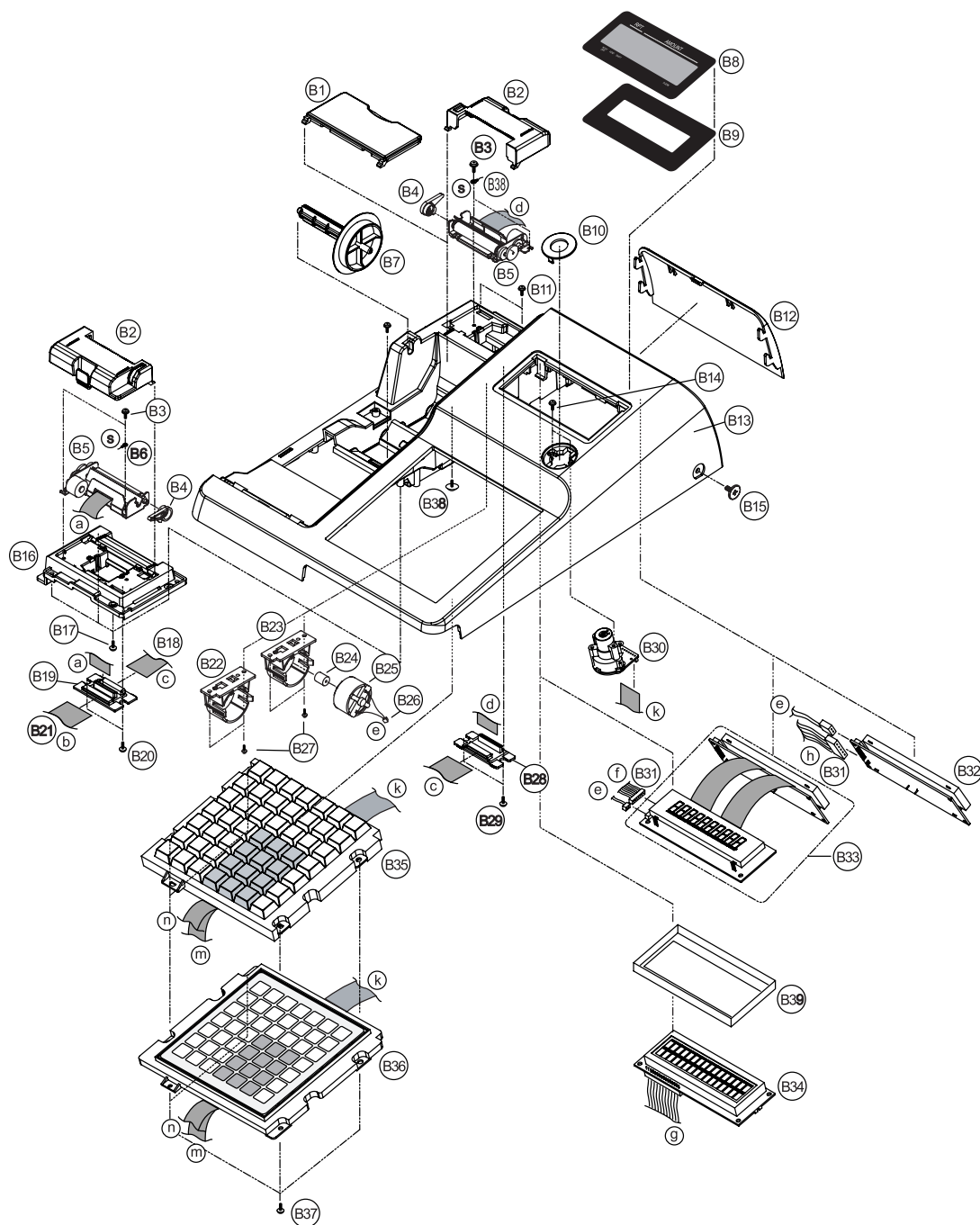


Figure 6-3. ASS'Y CASE-UPPER

6. Exploded Views and Parts List

6-1 Main Set

B. ASS'Y CASE-UPPER

No.	Code No.	Description/ Specification	Q'ty	Design-Location	Serviceable	Remark
B1	JK72-20234B	PMO-COVER 1STATION	1		Y	
B2	JK72-20233A	PMO-CAP PRINTER_N	2		Y	
B3	JK70-50057A	SCREW-TAPPING:BH,+2,M2.6,L10	4		Y	
B4	JK72-20235A	PMO-LEVER LOCK_N	2		Y	
B5	JK59-20009A	UNIT-PRINTER	2		Y	
B6	JK39-40682A	HARNESS-GND WIRE(1-STATION)	1		Y	
	JK39-40683A	HARNESS-GND WIRE(2-STATION)	1		Y	
B7	JK72-20231A	PMO-SPOOL WINDING	1		Y	
B8	JK72-20237A	PMO-WINDOW VIEW_VFD	1	VFD MODEL	Y	ER-260/265
B9	JK72-20247A	PMO-WINDOW VIEW_LCD	1	LCD MODEL	Y	ER-260M/265M
B10	JK72-20226B	PMO-COVER MODE	1		Y	
B11	6002-000171	SCREW-TAPPING:PH,+2S,M4,L10	2		Y	
B12	JK72-20230A	PMO-REAR WINDOW	1		Y	
B13	JK72-20223B	PMO-CASE UPPER	1		Y	
B14	6002-000319	SCREW-TAPPING:PH,+2,M3,L8	2		Y	
B15	JK70-50054A	SCREW-MACHINE:BH,Ø12,M4,L8	1		Y	
B16	JK72-20233B	PMO-HOLDER PRINTER_N	1		Y	
B17	6002-000174	SCREW-TAPPING:PWH,+2,M3,L10	4		Y	
B18	JK39-40566A	HARNESS-FFC:260,22P,250mm	1		Y	
B19	JK92-01474A	PBA JOINT(R):ER-260,SVC	1		Y	
B20	6002-000174	SCREW-TAPPING:PWH,+2,M3,L10	2		Y	
B21	JK39-40565A	HARNESS-PRINTER FFC:30P	1		Y	
B22	JK72-40975A	PMO-HOLDER MOTOR	1		Y	MOTOR
B23	JK72-40975B	PMO-HOLDER MOTOR	1		Y	NO MOTOR
B24	JK73-30200A	RCT-MOTOR	1		Y	
B25	3101-001071	MOTOR-DC	1		Y	
B26	JK39-40686A	HARNESS-SPOOL	1		Y	
B27	6002-000174	SCREW-TAPPING:PWH,+2,M3,L10	2		Y	
B28	JK92-01475A	PBA JOINT(JOURNAL)	1		Y	
B29	6002-000174	SCREW-TAPPING:PWH,+2,M3,L10	2		Y	
B30	3406-000116	SWITCH-ROTARY	1		Y	
B31	JK39-40685A	HARNESS-DISPLAY:ER-260,10P	1		Y	
B32	JK92-01476B	PBA DISPLAY:REAR ONLY	1	LCD MODEL	Y	ER-260M
B33	JK92-01476A	PBA DISPLAY:FRONT&REAR	1	VFD MODEL	Y	ER-260
B34	JK96-01080E	LCD ASS'Y: 2 LINE	1		Y	
B35	JK59-30028A	UNIT-KEYBOARD: 49KEY,RAISED	1		Y	ER-260
B36	JK59-30029A	UNIT-KEYBOARD:49KEY,FLAT	1		Y	ER-265
B37	6002-000174	SCREW-TAPPING:PWH,+2,M3,L10	4		Y	
B38	JK70-50029A	SCREW-TAPPING:PWH,M3,L6,Ø10	1		Y	
B39	JK68-40073A	LABEL(R) LCD SHEET	1		Y	

6-1 Main Set

C. ASS'Y KEY BOARD(RAISED, 49KEY)

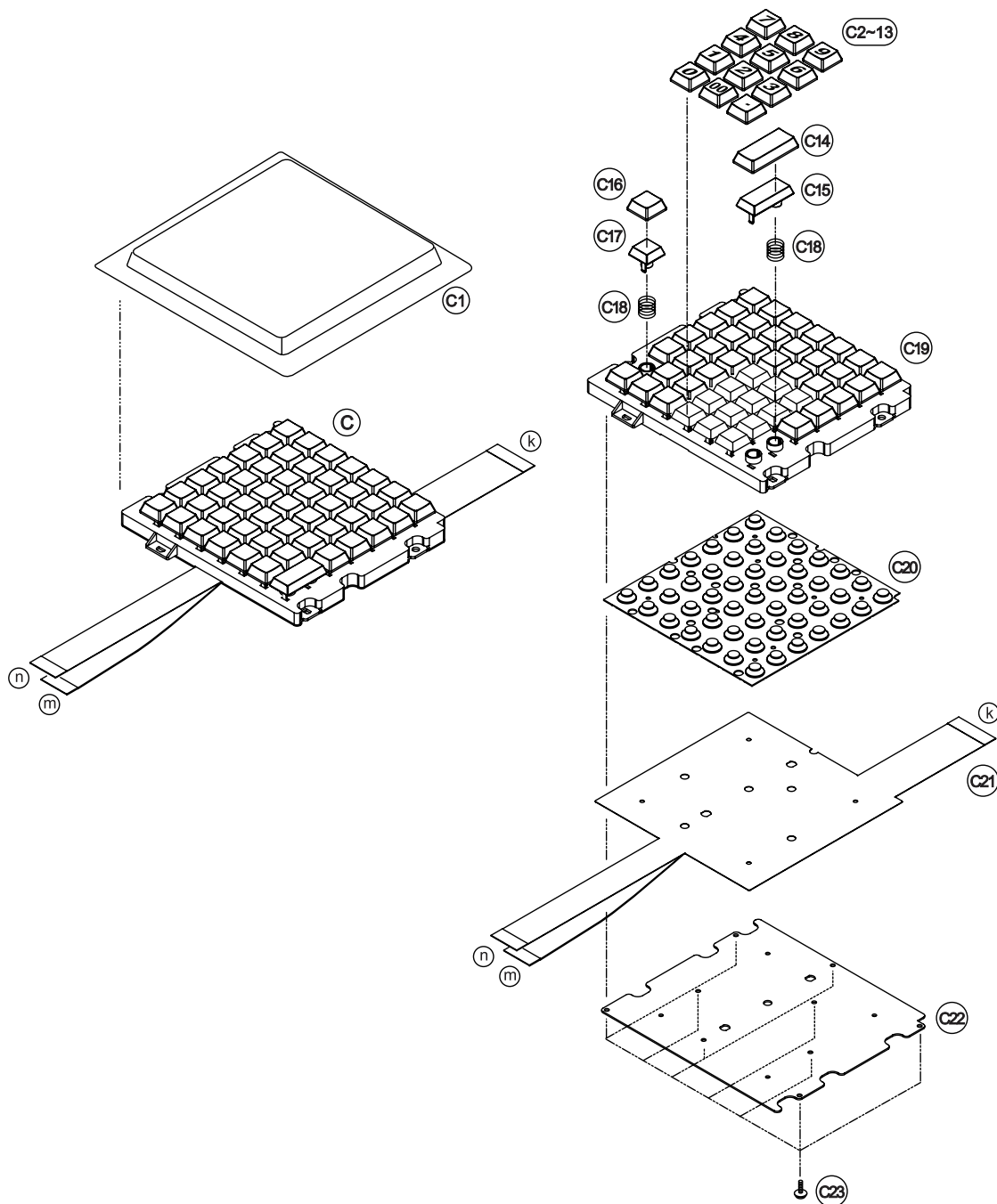


Figure 6-4. ASS'Y KEY BOARD(RAISED)

6-1 Main Set

C. ASS'Y KEY BOARD(RAISED, 49KEY)

No.	Code No.	Description/ Specification	Q'ty	Design-Location	Serviceable	Remark
C	JK59-30028A	UNIT-KEYBOARD	1		Y	
C1	JK73-20218A	WATER-PROOF	1		Y	
C2	JK81-20059A	KEY CAP_0	1		Y	
C3	JK81-20059B	KEY CAP_1	1		Y	
C4	JK81-20059C	KEY CAP_2	1		Y	
C5	JK81-20059D	KEY CAP_3	1		Y	
C6	JK81-20059E	KEY CAP_4	1		Y	
C7	JK81-20059F	KEY CAP_5	1		Y	
C8	JK81-20059G	KEY CAP_6	1		Y	
C9	JK81-20059H	KEY CAP_7	1		Y	
C10	JK81-20059J	KEY CAP_8	1		Y	
C11	JK81-20059K	KEY CAP_9	1		Y	
C12	JK81-20059L	KEY CAP_00	1		Y	
C13	JK81-20059M	KEY CAP_●	1		Y	
C14	JK81-20057C	KEY CAP_2X1	1		Y	
C15	JK81-20057B	KEY TOP_2X1(VERTICAL)	1		Y	
	JK81-20057E	KEY TOP_1X2(HORIZONTAL)	1		Y	
C16	JK81-20057H	KEY CAP_1X1	47		Y	
C17	JK81-20057G	KEY TOP_1X1	47		Y	
C18	JK81-20061A	RETURN-SPRING	49		Y	
C19	JK81-20050A	PMO KBD HOUSING_49,RAISED	1		Y	
C20	JK81-20050D	CONTACT RUBBER_49,RAISED	1		Y	
C21	JK81-20050C	ASSY-FPC_49,RAISED	1		Y	
C22	JK81-20050B	IPR BOTTOM PLATE_49,RAISED	1		Y	
C23	JK81-20058A	SCREW-TAPPING:BH,2.6X6	9		Y	

6-1 Main Set

D. ASS'Y KEY BOARD(FLAT, 49KEY)

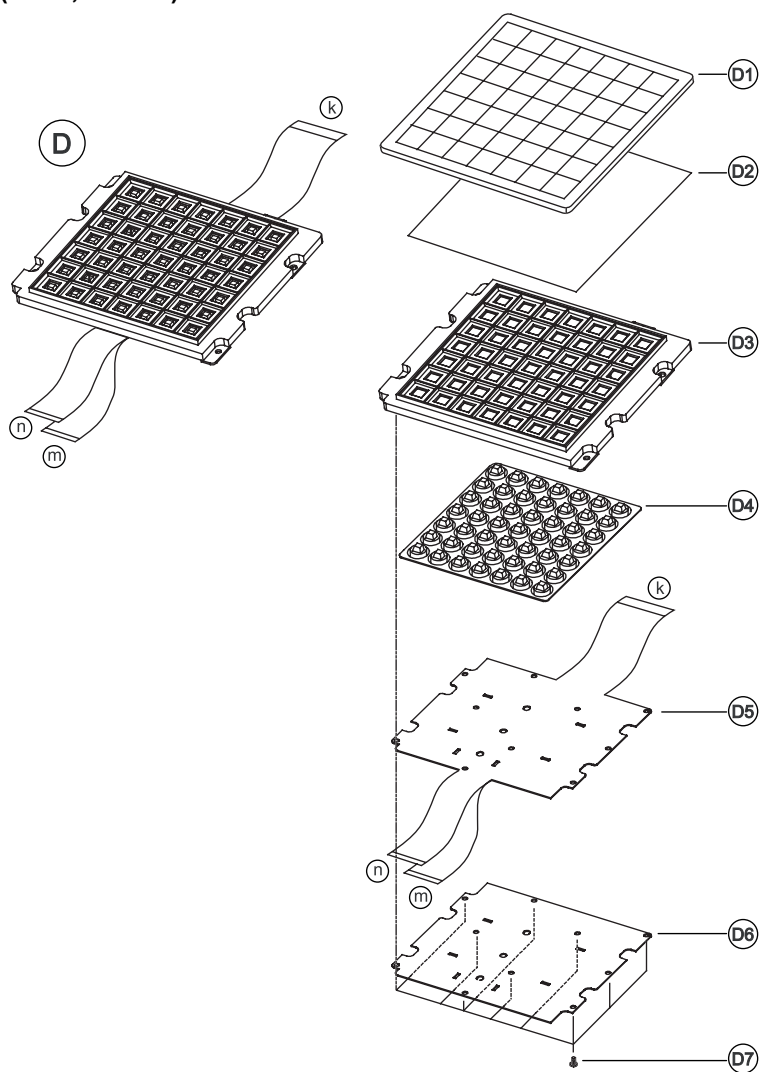


Figure 6-5. ASS'Y KEY BOARD(FLAT)

D. ASS'Y KEY BOARD(FLAT, 49KEY)

No.	Code No.	Description/ Specification	Q'ty	Design-Location	Serviceable	Remark
D	JK59-30029A	UNIT-KEYBOARD	1		Y	
D1	JK73-20219A	WATER-PROOF	1		Y	
D2	JK68-40076A	LABEL(P)- KEYBOARD SHEET	1		Y	ENGLISH(STD)
D3	JK81-20009B	PMO-KBD HOUSING	1		Y	
D4	JK81-20012A	KEY-RUBBER,49KEY,FLAT	1		Y	
D5	JK81-20051A	ASSY-FPC,49KEY,FLAT	1		Y	
D6	JK81-20011B	KBD-FRAME	1		Y	
D7	JK81-20058A	SCREW-TAPPING:BH,2.6X6	9		Y	

6-1 Main Set

E. ASS'Y CASE-LOWER

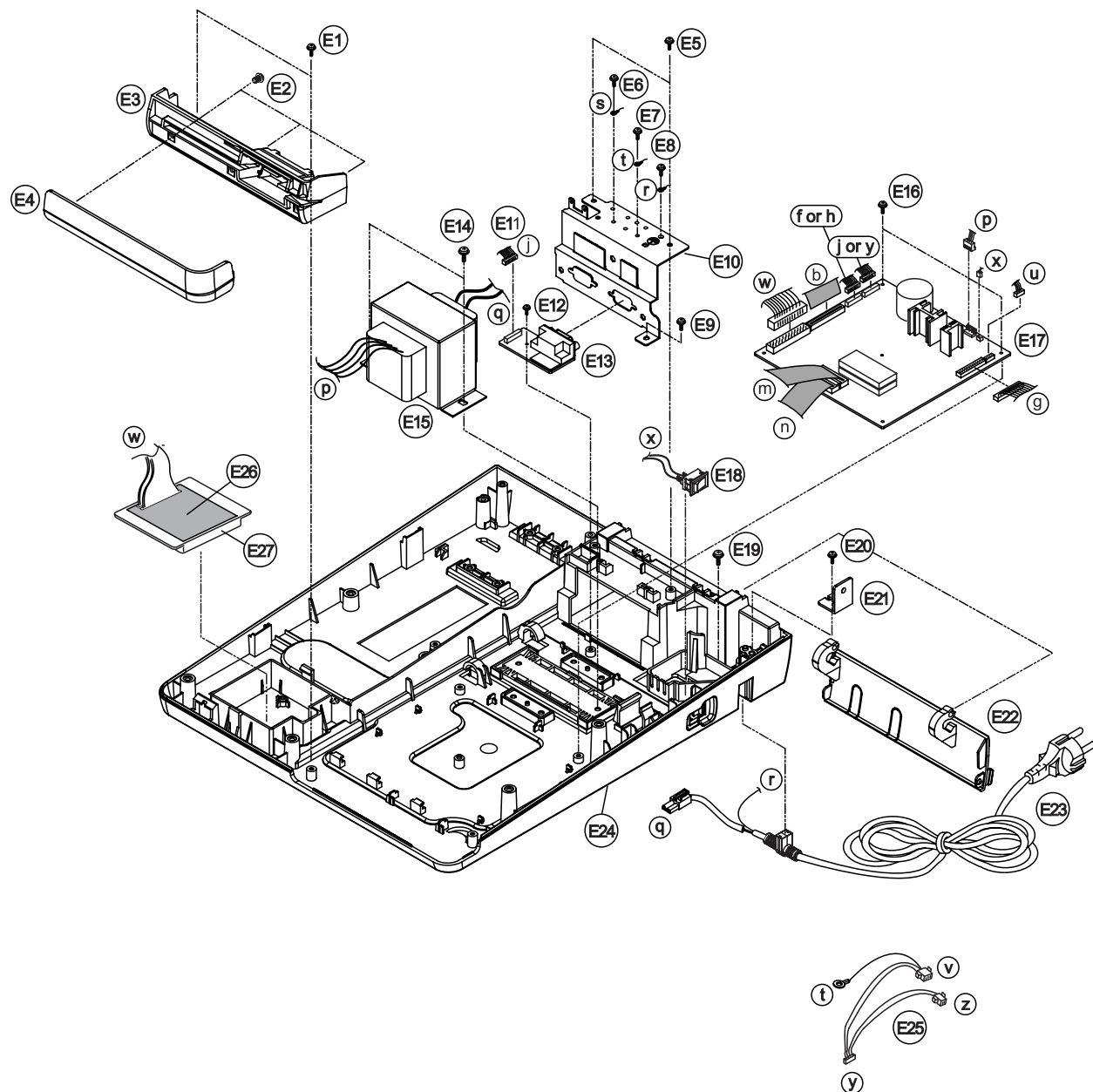


Figure 6-6. ASS'Y CASE-LOWER

6-1 Main Set

E. ASS'Y CASE-LOWER

No.	Code No.	Description/ Specification	Q'ty	Design-Location	Serviceable	Remark
E1	6002-000174	SCREW-TAPPING:PWH,M3,L10	2		Y	
E2	6002-000174	SCREW-TAPPING:PWH,M3,L10	3		Y	
E3	JK72-20228A	PMO-HOLDER MSR	1		Y	
E4	JK72-20246B	PMO-COVER FRONT	1		Y	
E5	6002-000174	SCREW-TAPPING:PWH,M3,L10	2		Y	
E6	JK60-00001A	SCREW-ASSY TAPTITE:M3,L8	1		Y	
E7	JK60-00001A	SCREW-ASSY TAPTITE:M3,L8	1		Y	
E8	6006-000187	SCREW-ASS'Y MACHINE:M4,L6	1		Y	
E9	JK60-00001A	SCREW-ASSY TAPTITE:M3,L8	1		Y	
E10	JK70-20060A	IPR-BRKT INTERFACE	1		Y	1 SERIAL
E11	JK39-40687A	HARNESS-I/F:6P	1		Y	
E12	6002-000175	SCREW-TAPPING:PWH,M3,L8	1		Y	
E13	JK92-01473A	PBA I/F:ER-260,232*1	1		Y	1 SERIAL
E14	JK70-50056A	SCREW-TAPPING:PWH,M4,L10	2		Y	
E15	JK26-00012A	TRANS POWER:EUROPE(230V)	1		Y	
	JK26-00013A	TRANS POWER:USA(120V)	1		Y	
E16	6002-000174	SCREW-TAPPING:PWH,M3,L10	2		Y	
E17	JK92-01472A	PBA MAIN-B'D:LCD,2STATION	1		Y	ER-260M
	JK92-01472D	PBA MAIN-B'D:LCD,1STATION	1		Y	ER-260M
	JK92-01472B	PBA MAIN-B'D:VFD,1STATION	1		Y	ER-260
	JK92-01472C	PBA MAIN-B'D:LCD,2ST,FISCAL	1		Y	FISCAL
E18	JK39-40688A	HARNESS-POWER S/W:2P	1		Y	
E19	6003-001149	SCREW-TAPTITE:PWH,+,S,M4,L10	1		Y	
E20	6002-000171	SCREW-TAPPING:PH,+,2S,M4,L10	1		Y	
E21	JK70-10002A	IPR-BRKT CASING	1		Y	
E22	JK72-20227A	PMO-DOOR INTERFACE	1		Y	
E23	JK39-10523A	POWER-CORD:EUROPE,D/GRAY	1		Y	
	JK39-10523B	POWER-CORD:USA,D/GRAY	1		Y	
	JK39-10523C	POWER-CORD:AUSTRALIA,D/GRAY	1		Y	
	JK39-10523D	POWER-CORD:UK,D/GRAY	1		Y	
E24	JK72-20224B	PMO-CASE LOWER	1		Y	
E25	JK39-40603A	HARNESS-DW/COMP:4P	1		Y	
E26	JK92-01284C	PBA SUB-FISCAL:1MBIT,34P	1		Y	FISCAL
	JK92-01284D	PBA SUB-FISCAL:2MBIT,34P	1		Y	FISCAL
E27	JK72-40205A	PMO-CASE FISCAL BOARD	1		Y	FISCAL

6-2 DRAWER (SMALL)

F. ASS'Y DRAWER (SMALL)

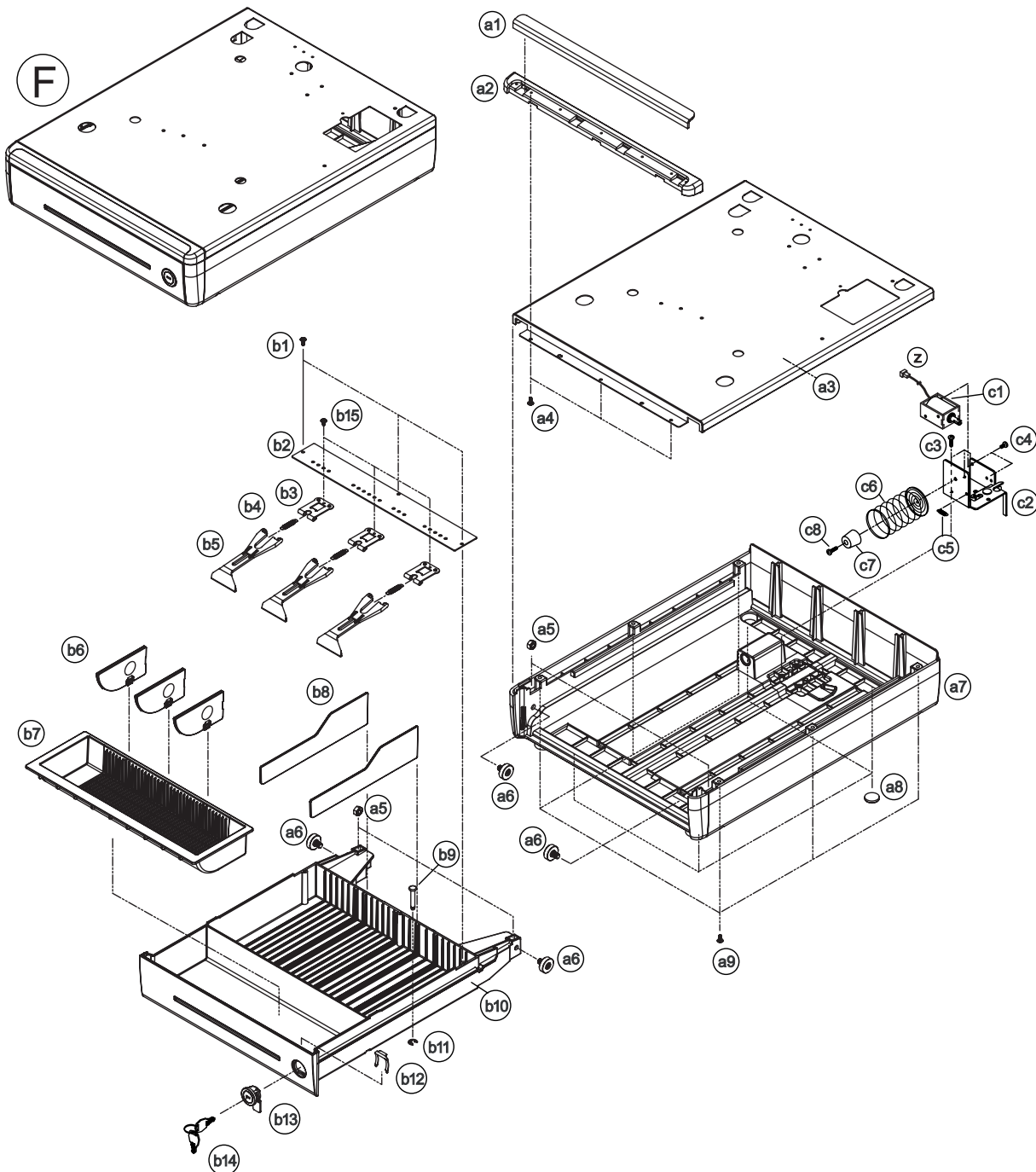


Figure 6-7. ASS'Y DRAWER

6-2 DRAWER (SMALL)

F. ASS'Y DRAWER (SMALL)

No.	Code No.	Description/ Specification	Q'ty	Design-Location	Serviceable	Remark
F	JK75-20035A	MEC-DRAWER E43LA:3B4C,17V,LOCK,BLACK	1		Y	EDR-E43LA
	JK75-20036A	MEC-DRAWER E44LA:4B4C,17V,LOCK,BLACK	1		Y	EDR-E44LA

a. ASS'Y HOUSING

No.	Code No.	Description/ Specification	Q'ty	Design-Location	Serviceable	Remark
a1	JK72-20044A	PMO-COVER DECO	1		Y	
a2	JK72-20045A	PMO-COVER FRONT	1		Y	
a3	JK70-20063A	IPR-HOUSING DRAWER	1		Y	
a4	JK70-50059A	SCREW-TAPTITE:BH,+,M3,L8,PI5.5	3		Y	
a5	6021-000243	NUT-HEXAGON:M6	4		Y	
a6	JK75-10386A	MEC-ROLLER	4		Y	
a7	JK72-20243A	PMO-COVER BOTTOM	1		Y	
a8	JK61-40201A	FOOT	4		Y	
a9	6002-000174	SCREW-TAPPING:PWH,M3,L10	6		Y	

b. ASS'Y TRAY

No.	Code No.	Description/ Specification	Q'ty	Design-Location	Serviceable	Remark
b1	JK70-50059A	SCREW-TAPTITE:BH,+,M3,L8,PI5.5	3		Y	
b2	JK70-10307A	IPR-PLATE HOLDER	1		Y	
b3	JK70-10314A	IPR-HOLDER LEVER	3		Y	
b4	6107-000134	SPRING-ES	3		Y	
b5	JK72-40267A	PMO-LEVER PRESS	3		Y	
b6	JK72-20241A	PMO-COIN PARTITION	5		Y	
b7	JK72-20242A	PMO-COIN TILL	1		Y	
b8	JK72-40240B	PMO-BILL PARTITION	2		Y	
b9	JK70-40302A	ICT-SHAFT PIN	1		Y	
b10	JK72-20240A	PMO-BILL COIN TRAY	1		Y	
b11	6044-000124	RING-E:ID3, OD7	1		Y	
b12	JK70-10323A	IPR-PLATE CLIP	1		Y	
b13	JK70-20066A	IPR-LEVER LOCK	1		Y	
b14	JK70-20065A	IPR-CYLINDER KEY	1		Y	
b15	JK70-50059A	SCREW-TAPTITE:BH,+,M3,L8,PI5.5	3		Y	

c. ASS'Y LOCK

No.	Code No.	Description/ Specification	Q'ty	Design-Location	Serviceable	Remark
c1	JK33-10500A	DC-SOLENOID	1		Y	
c2	JK75-10387A	MEC-LOCK LEVER	1		Y	
c3	6002-000201	SCREW-TAPPING(RH):M4,L12	3		Y	
c4	6001-000131	SCREW-MACHINE(BH):M3,L6	2		Y	
c5	6107-000126	SPRING-ES	1		Y	
c6	JK61-70101A	SPRING-PUSH	1		Y	
c7	JK73-20210A	REX-BUMPER	1		Y	
c8	6002-000157	SCREW-TAPPING(PH):M4,L14	1		Y	

6-2 DRAWER (MIDDLE)

F. ASS'Y DRAWER (MIDDLE)

(a) Ass'y Bill-Coin (4B/8C, 5B/5C)

No.	Code No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
a	JK97-20014A	MEA-UNIT BILL COIN: 4B8C	1		Y	
	JK97-00407A	MEA-UNIT BILL COIN: 5B5C	1		Y	
a-1	JK72-40267A	PMO-LEVER PRESS	4		Y	
a-2	6107-000134	SPRING ES	4		Y	
a-3	JK70-10314A	IPR-HOLDER LEVER	4		Y	
a-4	6002-000175	SCREW-TAPPING	3		Y	
a-5	6002-001078	SCREW-TAPPING	4		Y	
a-6	JK70-10304A	IPR-PLATE HOLDER	1		Y	
a-7	JK72-40269A	PMO-PANEL PARTITION	3		Y	
a-8	JK72-20088A	PMO-BILL COIN TILL: 4B8C	1		Y	
	JK72-40268A	PMO-BILL COIN TILL: 5B5C	1		Y	
a-9	JK72-20090A	PMO-COIN PARTITION: 4B8C	6		Y	
a-10	JK72-20089A	PMO-COIN TILL: 4B8C	1		Y	

(a) Ass'y Bill-Coin (7B/8C)

No.	Code No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
a	JK97-01103A	MEA-UNIT BILL COIN: 7B8C	1		Y	
a-1	6002-000175	SCREW-TAPPING	3		Y	
a-2	JK70-00068A	IPR-HOLDER PLATE	1		Y	
a-3	JK72-00083A	PMO-BILL PARTITION	5		Y	
a-4	JK72-00082A	PMO-BILL TILL	2		Y	
a-5	JK72-00084A	PMO-BILL COIN TILL	1		Y	

(b) Ass'y Tray-Till

No.	Code No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
b	JK97-01073B	MEA-UNIT TRAY TILL: 5B5C	1		Y	
	JK97-01073D	MEA-UNIT TRAY TILL: 4B8C,7B8C(EURO)	1		Y	
b-1	JK75-10389A	MEC-LOCK: DRAWER	1		Y	
b-2	JK70-10014A	IPR-PLATE FRONT	1		Y	
	JK70-10014B	IPR-PLATE FRONT	1		Y	
b-3	JK75-00025A	MEA-TRAY TILL: 4B8C,7B8C	1		N	
	JK75-00025B	MEA-TRAY TILL: 5B5C	1		N	
b-4	JK73-10203A	RPR-TENSION	2		N	
b-5	JK75-10386A	MEC-ROLLER	2		Y	
b-6	6031-000549	WASHER-PLAIN	2		Y	
b-7	6003-000221	SCREW-TAPTITE	1		Y	
b-8	JK70-10324A	IPR-SUPPORT TRAY	1		N	
b-9	JK70-40302A	ICT,SHAFT PIN	1		N	
b-10	6044-000124	RING-E	1		Y	
b-11	6002-001042	SCREW-TAPPING	2		Y	
b-12	JK70-10323A	IPR-PLATE CLIP	1		Y	

6-2 DRAWER (MIDDLE)

(c) Ass'y Housing

No.	Code No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
c	JK97-01074A	MEA-COVER HOUSING	1		Y	
	JK97-01074B	MEA-COVER HOUSING: NONE HOLE(OPTION)	1		Y	
c-1	JK75-00026A	MEA-SUB HOUSING	1		Y	
	JK75-00026B	MEA-SUB HOUSING: NONE HOLE(OPTION)	1		Y	
c-2	JK75-10386A	MEC-ROLLER: DRAWER	2		Y	
c-3	JK73-20207A	REX-PAD DRAWER	2		N	

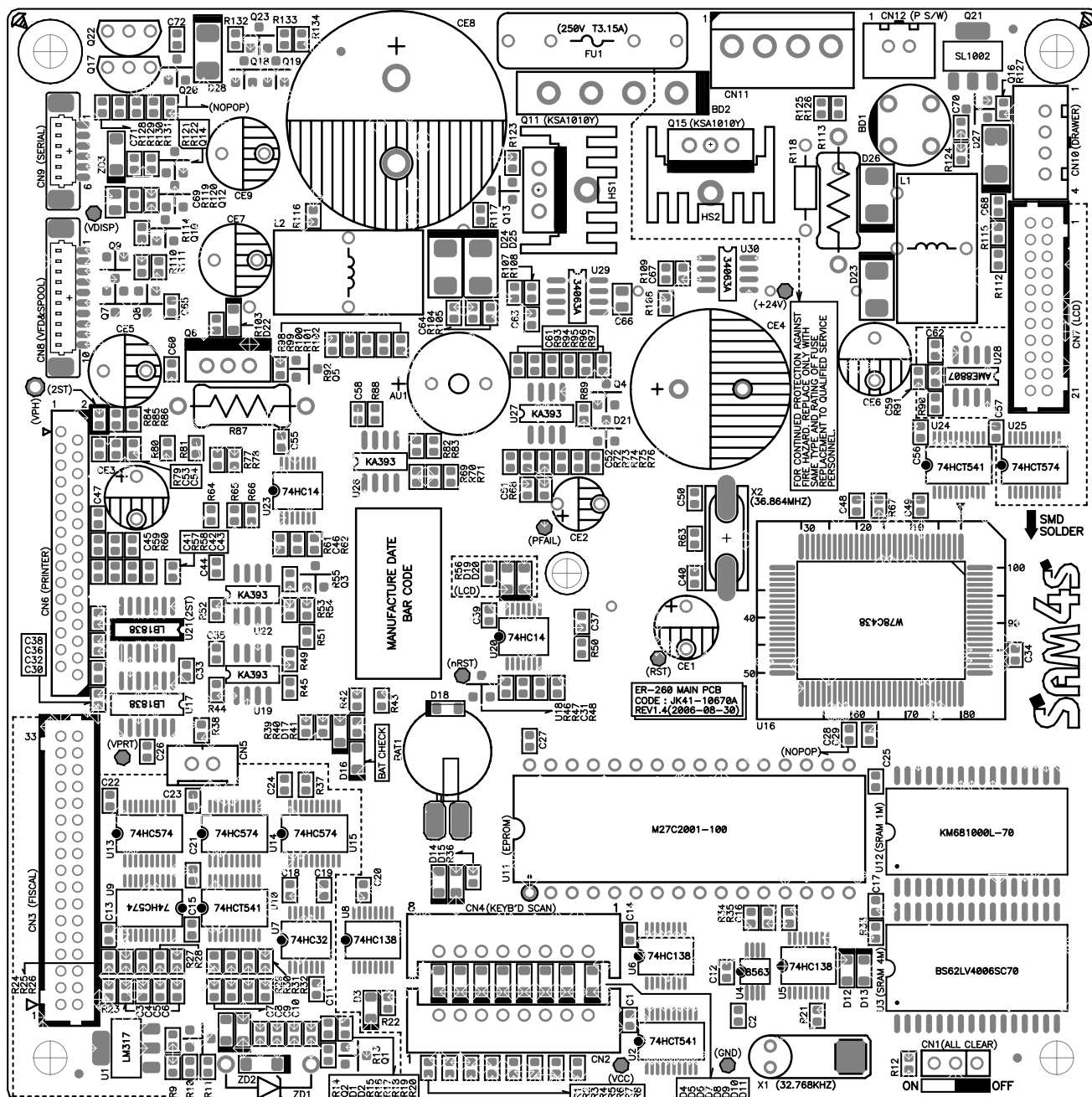
(d) Ass'y Lock

No.	Code No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
d	JK97-00985A	MEA-UNIT LOCK: 2-LATCH, LONG LEVER	1		Y	
	JK97-00987A	MEA-UNIT LOCK: 2-LATCH, SHORT LEVER	1		Y	
d-1	6002-000157	SCREW-TAPPING	1		Y	
d-2	JK73-20210A	REX-BUMPER	1		Y	
d-3	JK61-70100A	SPRING-PUSH	1		Y	
d-4	JK75-00027A	MEC-LOCK LEVER: 2-LATCH, LONG LEVER	1		Y	
	JK75-00027B	MEC-LOCK LEVER: 2-LATCH, SHORT LEVER	1		Y	
d-5	6107-001014	SPRING-ES	1		Y	
d-6	JK33-10500A	SOLENOID-DC	1		Y	
d-7	6001-000131	SCREW-MACHINE	2		Y	
d-8	6001-000525	SCREW-MACHINE	2		Y	
d-9	3405-001013	SWITCH-MICRO	1		Y	
d-10	JK39-40301R	CBF-HARNESS	1		Y	
d-11	6002-000161	SCREW-TAPPING	3		Y	

(e) Ass'y Bottom

No.	Code No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
e	JK97-01976A	MEA-UNIT BOTTOM	1		Y	
	JK97-01076B	MEA-UNIT BOTTOM: UNIVERSAL	1		Y	
e-1	JK70-10938A	IPR-PLATE BOTTOM	1		Y	
e-2	JK73-40200A	RMO-STOPPER	2		Y	
	JK73-10902A	RMO-STOPPER: UNIVERSAL	2		Y	
e-3	JK61-40200A	RMO-FOOT RUBBER	4		Y	
e-4	6002-000234	SCREW-TAPPING	4		Y	
e-5	6003-000267	SCREW-TAPTITE	6		Y	
e-6	6003-000267	SCREW-TAPTITE	2		Y	
e-7	JK70-10401A	IPR-PLATE SPRING	2		Y	
e-8	6003-000267	SCREW-TAPTITE	4		Y	

7-1 Main PCB



7. PCB Layout and Parts List

7-1 Main PCB

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-01472CLF	PBA MAIN-BOARD:ER-260MF,LCD,2STA,FISCAL	1	ASS'Y	Y	
-	0402-000119	DIODE-BRIDGE:W02G,200V,1.5A,-,-	1	BD1	Y	
-	0402-000290	DIODE-BRIDGE:KBU6B,100V,6A,-,BK	1	BD2	Y	
-	0403-000141	DIODE-ZENER:1N4735A,6.2V,5%,1W,DO-41,TP	1	ZD1	Y	
-	0501-000294	TR-SMALL SIGNAL:PNP,800mW,TO-92,120-240,	2	Q17,Q22	Y	
-	0502-000234	TR-POWER:PNP,40W,TO-220,100-200,	3	Q6,Q11,Q15	Y	
-	1102-000137	IC-EPROM:27C2001,256Kx8BIT,DIP,32P,100ns	1	U11	Y	
-	2001-000119	R-CARBON:680OHM,5%,1/4W,AA,TP,2.4X6.0MM	1	R118	Y	
-	2003-000502	R-METAL OXIDE(S):150Ω ,5%,2W,TC,3.8*10.6	1	R87	Y	
-	2005-001001	R-WIRE WOUND:0.1ohm,5%,1W,WRIT1W0.1Ω -J	1	R113	Y	
-	2401-000032	C-AL:100uF,50V,RADIAL,φ8*11.5L,RoHS	1	CE9	Y	
-	2401-000042	C-AL:100uF,16V,RADIAL,φ6.3*7L,RoHS	2	CE1,CE3	Y	
-	2401-000480	C-AL:10uF,20%,50V,GP,TP,5x11,5	1	CE2	Y	
-	2401-001313	C-AL:4700uF,20%,50V,LUG,φ25.4*30L,RoHS,	1	CE8	Y	
-	2401-001363	C-AL:470uF,20%,16V,GP,TP,10x12.5,5	3	CE5,CE6,CE7	Y	
-	2401-002621	C-AL:2200uF,20%,50V,RADIAL,φ18*25L,RoHS	1	CE4	Y	
-	2801-003376	CRYSTAL-UNIT:0.032768MHz,20ppm,28-AA Y,12	1	X1	Y	
-	3002-001027	BUZZER-PIEZO:85dB,1.5V,24mA,2.048KHz,BK	1	AU1	Y	
-	3601-000261	FUSE-CARTRIDGE:250V,3.15A,TIME-LAG,GLASS	1	FU1	Y	
-	3602-000001	FUSE-CLIP:-,-,30mohm	2	FU1	Y	
-	3704-000255	SOCKET-IC:32P,DIP,SN,2.54mm	1	U11	Y	
-	3708-000327	CONNECTOR-FFC:8P,1R,2.54mm,ST,BLACK	2	CN2,CN4	Y	
-	3708-001395	CONNECTOR-FPC/FFC/PIC:30P,1mm,ST,DIP,TOP	1	CN6	Y	
-	3710-000111	CONNECTOR-SHUNT:2P,1R,2.54mm,JMHHA01,	1	CN1	Y	
-	3711-000242	CONNECTOR-HEADER:1WALL,4P,1R,3.96mm,ST	1	CN11	Y	
-	3711-000841	CONNECTOR-HEADER:BOX,34P,2R,2MM,ST	1	CN3	Y	
-	3711-001475	CONNECTOR-HEADER:NOWALL,3P,1R,2.54mm,ST	1	CN1	Y	
-	3711-002002	CONNECTOR-HEADER:BOX,22P,2R,2mm,ST,BLK	1	CN7	Y	
-	3711-004100	WAFER;BOX-HEADER,1R,2P,2.5mm,ST,WHITE,	1	CN12	Y	
-	3711-004105	WAFER;BOX-HEADER,1R,4P,2.5mm,ST,WHITE,	1	CN10	Y	

7-1 Main PCB

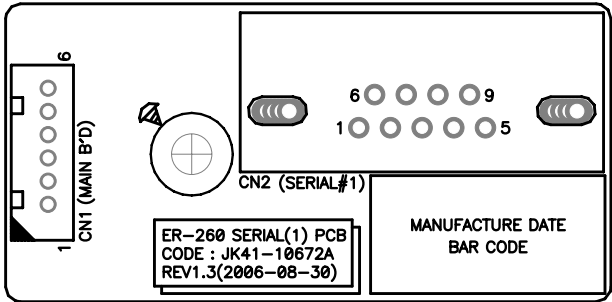
No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	4301-000121	BATTERY:3V,11mAh,MS920S-FL27E	1	BAT1	Y	
-	6002-000175	SCREW-TAPPING:PDH,+,2,M3,L8,ZPC(YEL)	2	KSA1010Y+HS1, KSA1010Y+HS2	N	
-	6203-000108	HEAT SINK:NONE,T3,W10.5,L15,H30,AL,YS100	2	HS1,HS2	Y	
-	JC68-10564A	LABEL(P)-PROTECTOR:SLB-3108H,ART,-,100(S	1	EPROM	N	
-	JK27-60100D	COIL-FILTER:140uH,0.2Ω,8.5*17*17,TR15Φ	2	L1,L2	Y	
-	0401-001003	DIODE-SWITCHING:MMBD6050LT1,70V,200mA,22	1	D21	Y	
-	0402-001189	DIODE-RECTIFIER:M4,400V,1A,SMD-2,TP	2	D27,D28	Y	
-	0403-000754	DIODE-ZENER:BZT52C30,30V,500mW,SOD-123	1	ZD3	Y	
-	0404-001051	DIODE-SCHOTTKY:SK14,40V,1A,DO-214AA,	4	D23,D24,D25,D26	Y	
-	0404-001052	DIODE-SCHOTTKY:BAT43WS,SOD-323	20	D1~D15,D17~D20,D22	Y	
-	0501-000279	TR-SMALL SIGNAL:PNP,150mW,SOT-23,120-240	7	Q2,Q7,Q8,Q12,Q13,Q18, Q19	Y	
-	0501-000457	TR-SMALL SIGNAL:MMBT2222A,NPN,350mW,SOT-	9	Q1,Q3,Q4,Q5,Q9,Q10, Q14,Q16,Q23	Y	
-	0502-000400	TR-POWER;SL1002,NPN,3A,10W,SOT-23	1	Q21	Y	
-	0801-001116	IC-CMOS LOGIC:74HC14,INVERTER,TSSOP,14P	2	U20,U23	Y	
-	0801-001117	IC-CMOS LOGIC:74HC138,DECODER,TSSOP	3	U5,U6,U8	Y	
-	0801-001118	IC-CMOS LOGIC:74HCT541,BUFFER,TSSOP	3	U2,U10,U24	Y	
-	0801-001119	IC-CMOS LOGIC:74HCT574,D-F/F,TSSOP	5	U9,U13~U15,U25	Y	
-	0801-001120	IC-CMOS LOGIC:74HC32,OR GATE,TSSOP	1	U7	Y	
-	0903-001166	IC-CPU;W78C438CF,PQFP,100P	1	U16	Y	
-	0909-000138	IC-REAL TIME CLOCK:PCF8563,12C,TSSOP,8P	1	U4	Y	
-	1003-001234	IC-MOTOR DRIVER:LB1838M,SOP,14P,225MIL,	2	U17,U21	Y	
-	1106-000131	IC-SRAM:681000,128Kx8BIT,SOP,32P,1.27mm	1	U12	Y	
-	1106-000246	IC-SRAM:BS62LV4006,512Kx8BIT,SOP,32P,4M	1	U3	Y	
-	1202-000164	IC-VOLTAGE COMPARATOR:SOP,8P,1.27mm,DUAL	4	U19,U22,U26,U27	Y	
-	1203-000393	IC-REGULATOR:LM317(ADJ),SOT-223,3P	1	U1	Y	
-	1203-000404	IC-DC/DC CONVERTER:34063,SOP,8P,150MIL,P	2	U29,U30	Y	
-	1203-000501	IC-RESET:AME8500CEETBE42,SOT-23,3P,5V	1	U18	Y	
-	1203-001765	IC-REGULATOR;AME8807AEHA,SOP,8P	1	U28	Y	
-	2008-000008	R-CHIP:100OHM,5%,1/10W,1608	3	R36,R96,R97	N	
-	2008-000013	R-CHIP:220OHM,5%,1/10W,1608	3	R14,R58,R84	N	

7. PCB Layout and Parts List

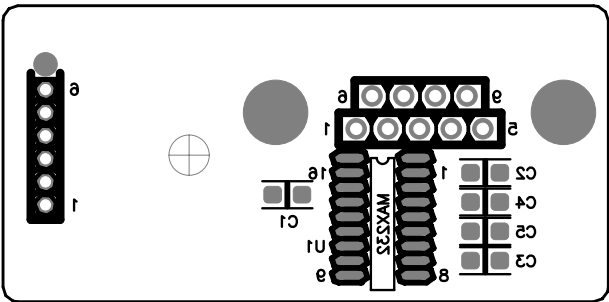
7-1 Main PCB

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	2008-000020	R-CHIP:470OHM,5%,1/10W,1608	10	R10,R15~R18,R39,R56, R111,R123,R125	N	
-	2008-000026	R-CHIP:1KOHM,5%,1/10W,1608	14	R19,R22,R33~R35,R40, R99~R101,R103,R122, R130,R133,R134	N	
-	2008-000030	R-CHIP:2KOHM,5%,1/10W,1608	4	R9,R13,R74,R121	N	
-	2008-000037	R-CHIP:4.7KOHM,5%,1/10W,1608	52	R1~R8,R20,R23~R32,R37, R38,R42~R44,R46,R51, R52,R55,R63,R67~R69, R72,R73,R88,R89, R92~R95,R98,R102,R105, R110,R112,R114~R117, R127,R129,R132	N	
-	2008-000041	R-CHIP:6.8KOHM,5%,1/10W,1608	2	R49,R70	N	
-	2008-000044	R-CHIP:10KOHM,5%,1/10W,1608	18	R11,R12,R45,R47,R48, R50,R65,R66,R77,R78, R80,R81,R83,R107,R108, R120,R124,R128	N	
-	2008-000045	R-CHIP:12KOHM,5%,1/10W,1608	4	R53,R71,R82,R109	N	
-	2008-000046	R-CHIP:15KOHM,5%,1/10W,1608	4	R60,R75,R85,R90	N	
-	2008-000047	R-CHIP:18KOHM,5%,1/10W,1608	3	R41,R61,R104	N	
-	2008-000051	R-CHIP:27KOHM,5%,1/10W,1608	3	R76,R119,R126	N	
-	2008-000054	R-CHIP:36KOHM,5%,1/10W,1608	4	R54,R62,R91,R106	N	
-	2008-000063	R-CHIP:100KOHM,5%,1/10W,1608	2	R57,R79	N	
-	2008-000065	R-CHIP:150KOHM,5%,1/10W,1608	4	R21,R59,R64,R86	N	
-	2203-000192	C-CERAMIC,CHIP:100nF,+80-20%,50V,Y5V,TP,	2	C66,C69	N	
-	2204-000001	C-CERAMIC,CHIP:5pF,5%,50V,1608	2	C40,C50	N	
-	2204-000003	C-CERAMIC,CHIP:15pF,5%,50V,1608	1	C2	N	
-	2204-000010	C-CERAMIC,CHIP:100pF,5%,50V,1608	19	C3~C11,C13,C19,C30, C32,C36,C38,C59,C63, C67,C72	N	
-	2204-000023	C-CERAMIC,CHIP:10nF,10%,50V,X7R,1608	1	C46	N	
-	2204-000028	C-CERAMIC,CHIP:100nF,+80-20%,25V,Y5V,160	42	C1,C12,C14~C18, C20~C27,C29,C33~C35, C39,C41~C45,C47~C49, C51,C53~C58,C60,C61, C64,C65,C68,C70,C71	N	
-	2204-000029	C-CERAMIC,CHIP:1uF,+80-20%,16V,Y5V,1608	4	C31,C37,C52,C62	N	
-	2801-003391	CRYSTAL-UNIT:36.864MHZ,SX-1	1	X2	Y	
-	3711-004121	WAFER;BOX-HEADER,1R, 6P,1.25mm,SMD,	1	CN9	Y	
-	3711-004125	WAFER;BOX-HEADER,1R, 10P,1.25mm,SMD,	1	CN8	Y	
-	JK41-10670A	PCB-MAIN:ER-260,FR-4,2L,T1.6,130*130mm	1	PCB	N	

7-2 Serial PCB



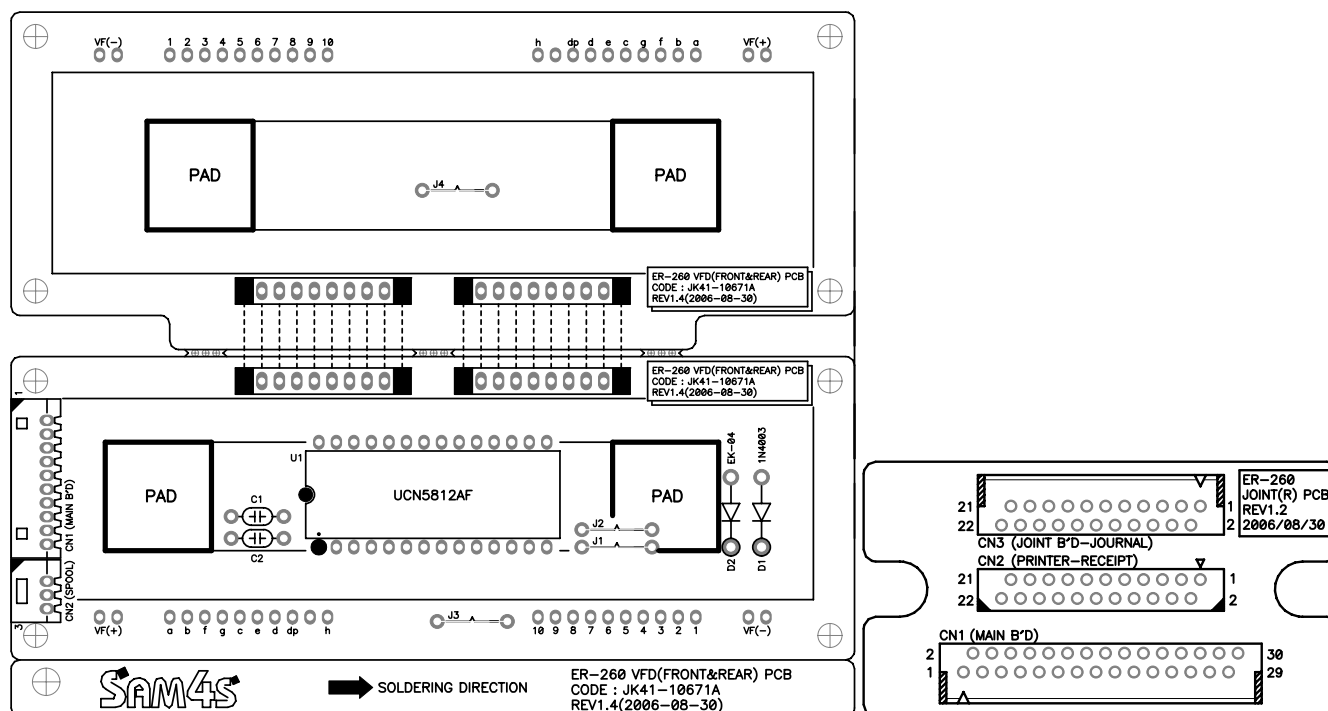
[TOP]



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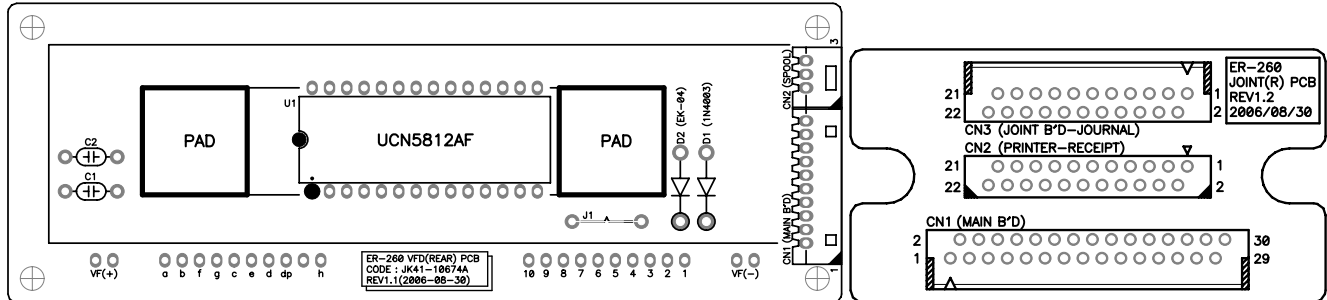
No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-01473ALF	PBA I/F:ER-260,232*1,STD	1	ASS'Y	Y	
-	3701-000232	CONNECTOR-DSUB:9P,2R,FEMALE,ANGLE,AUF	1	CN2	Y	
-	3711-003422	CONNECTOR-HEADER:BOX,6P,1R,2mm,ST,DIP	1	CN1	Y	
-	1006-000133	IC-DRIVER/RECEIVER:232,SOIC,16P,1.27mm	1	U1	Y	
-	2203-000990	C-CERAMIC,CHIP:1uF,+80-20%,25V,Y5V,TP,20	5	C1~C5	Y	
-	JK41-10672A	PCB-I/F:ER-260,232*1,FR-1,1L,T1.6,52.5*2	1	PCB	N	

7-3 Front & Rear Display PCB & Joint(R) PCB



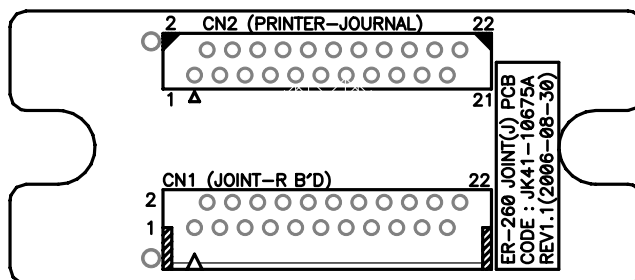
No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-01476ALF	PBA DISPLAY:ER-260,FRONT&REAR	1	ASS'Y	Y	
-	1003-001381	IC-VFD:HV5812P,DIP,28P,540MIL,-,ST,PLA	1	U1	Y	
-	3708-001394	CONNECTOR-FPC/FFC/PIC:22P,1mm,ST,DIP,TOP	1	CN2 (JOINT B'D)	Y	
-	3708-001397	CONNECTOR-FPC/FFC/PIC:30P,1mmAN,DIP,SIDE	1	CN1 (JOINT B'D)	Y	
-	3711-003408	CONNECTOR-HEADER:BOX,3P,1R,2mm,ANGLE	1	CN2	Y	
-	3711-003429	CONNECTOR-HEADER:BOX,10P,1R,2mm,AN,DIP	1	CN1	Y	
-	JK07-00005A	DISPLAY VFD-DC10G:FUTABA,10-LT-50GK	2	V1,V2 (FUTABA VFD)	Y	
-	JK39-40684A	HARNESS-JUMP WIRE:ER-260,DISPLAY,10P	2	HARNESS	Y	
-	JK73-10207A	RPR-PAD(15X15,T5):SPONGE,BLACK	4	PCB+VFD	Y	
-	JK39-40685A	HARNESS-DISPLAY:ER-260,10P	1	DISPLAY HARNESS	Y	
-	0402-000129	DIODE-RECTIFIER:1N4003,200V,1A,DO-41,TP	1	D1	Y	
-	0402-000208	DIODE-RECTIFIER:EK-04,40V,1.5A,DO-41	1	D2	Y	
-	2202-000630	C-CERAMIC,MLC-AXIAL:100nF,10%,50V,X7R,TP	2	C1,C2	Y	
-	JC39-40511A	CBF HARNESS:ML-80,JUMPER,AWG22,52mm,SILV	4	J1~J4	Y	
-	JK41-10671A	PCB-VFD:ER-260,FR-1,1L,T1.6,172.3*102.3m	1	PCB	N	

7-4 Rear Display PCB & Joint(R) PCB



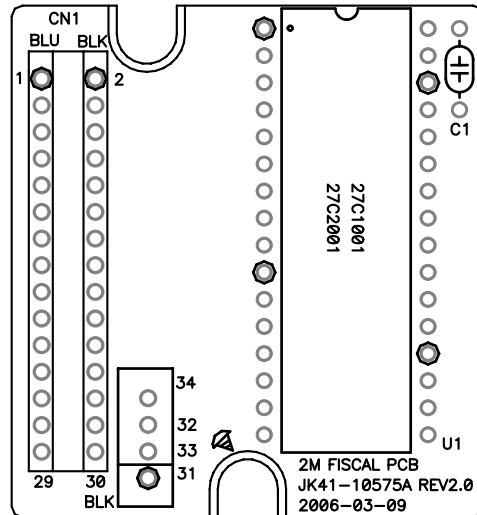
No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-01476BLF	PBA DISPLAY:ER-265M,REAR ONLY	1	ASS'Y	Y	
-	1003-001381	IC-VFD:HV5812P,DIP,28P,540MIL,-,-,ST,PLA	1	U1	Y	
-	3708-001394	CONNECTOR-FPC/FFC/PIC:22P,1mm,ST,DIP,TOP	1	CN2 (JOINT B'D)	Y	
-	3708-001396	CONNECTOR-FPC/FFC/PIC:22P,1mmAN,DIP,SIDE	1	CN3 (JOINT B'D)	Y	
-	3708-001397	CONNECTOR-FPC/FFC/PIC:30P,1mmAN,DIP,SIDE	1	CN1 (JOINT B'D)	Y	
-	3711-003408	CONNECTOR-HEADER:BOX,3P,1R,2mm,ANGLE	1	CN2	Y	
-	3711-003429	CONNECTOR-HEADER:BOX,10P,1R,2mm,AN,DIP	1	CN1	Y	
-	JK07-00005A	DISPLAY VFD-DC10G:FUTABA,10-LT-50GK	1	V1 (FUTABA VFD)	Y	
-	JK73-10207A	RPR-PAD(15X15,T5):SPONGE,BLACK	2	PCB+VFD	Y	
-	JK39-40685A	HARNESS-DISPLAY:ER-260,10P	1	DISPLAY HARNESS	Y	
-	0402-000129	DIODE-RECTIFIER:1N4003,200V,1A,DO-41,TP	1	D1	Y	
-	0402-000208	DIODE-RECTIFIER:EK-04,40V,1.5A,DO-41	1	D2	Y	
-	2202-000630	C-CERAMIC,MLC-AXIAL:100nF,10%,50V,X7R,TP	2	C1,C2	Y	
-	JC39-40511A	CBF HARNESS:ML-80,JUMPER,AWG22,52mm,SILV	1	J1	Y	
-	JK41-10674A	PCB-VFD REAR:ER-260M,FR-1,1L,T1.6,RoHS	1	PCB	N	

7-5 Joint(J) PCB



No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-01475ALF	PBA JOINT(J):ER-265,STD	1	ASS'Y	Y	
-	3708-001396	CONNECTOR-FPC/FFC/PIC:22P,1mmAN,DIP,SIDE	1	CN1	Y	
-	3708-001394	CONNECTOR-FPC/FFC/PIC:22P,1mm,ST,DIP,TOP	1	CN2	Y	
-	JK41-10675A	PCB-JOINT(J):ER-260,FR-4,2L,T1.6mm	1	PCB	N	

7-6 Fiscal PCB



7-6-1 FISCAL 1MBIT - EPROM (27C1001)

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-01284C	PBA SUB-FISCAL:ER-350II,1MBIT,34P	1	ASS'Y	Y	
-	1102-000109	IC-EPROM:27C010,128Kx8BIT,DIP,32P,120ns	1	U1	Y	
-	2202-000630	C-CERAMIC,MLC-AXIAL:100nF,10%,50V,X7R,TP	1	C1	Y	
-	JK39-00009B	CBF-HARNESS-FISCAL 2M:ER-420F,SER,34P	1		Y	
-	JK41-10575A	PCB-FISCAL:2M,FR-4,2L,T1.6mm,164*132mm,	1	FISCAL PCB	N	

7-6-1 FISCAL 2MBIT - EPROM (27C2001)

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-01284D	PBA SUB-FISCAL:ER-350II,2MBIT,34P	1	ASS'Y	Y	
-	1102-000136	IC-EPROM:27C020,256Kx8BIT,DIP,32P,150ns	1	U1	Y	
-	2202-000630	C-CERAMIC,MLC-AXIAL:100nF,10%,50V,X7R,TP	1	C1	Y	
-	JK39-00009B	CBF-HARNESS-FISCAL 2M:ER-420F,SER,34P	1		Y	
-	JK41-10575A	PCB-FISCAL:2M,FR-4,2L,T1.6mm,164*132mm,	1	FISCAL PCB	N	

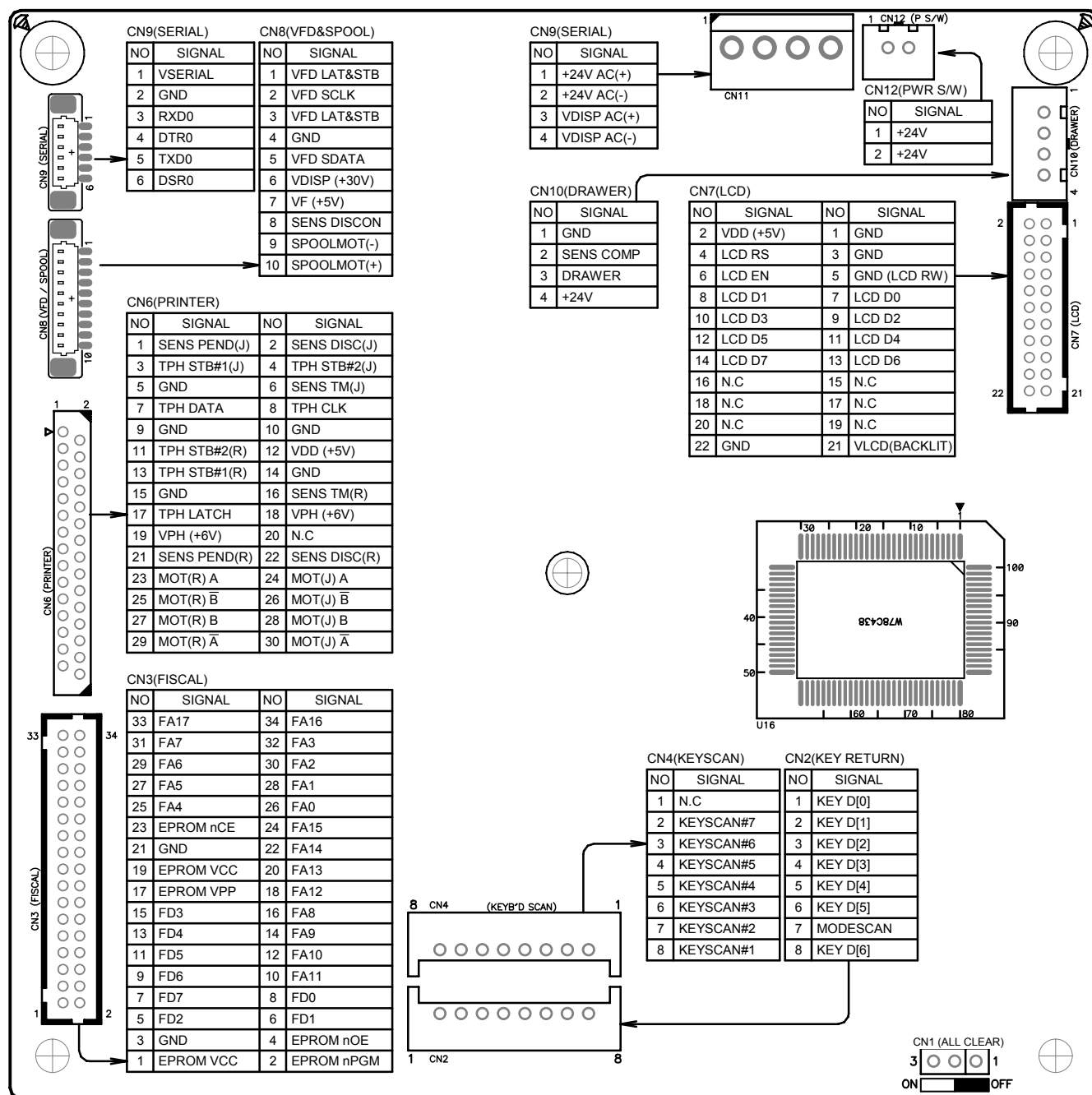
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9 Wiring Diagram



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10 Schematic Diagram

[Schematics Sheet Content]

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2. Display PCB Schematics.

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3. Serial I/F PCB Schematics.

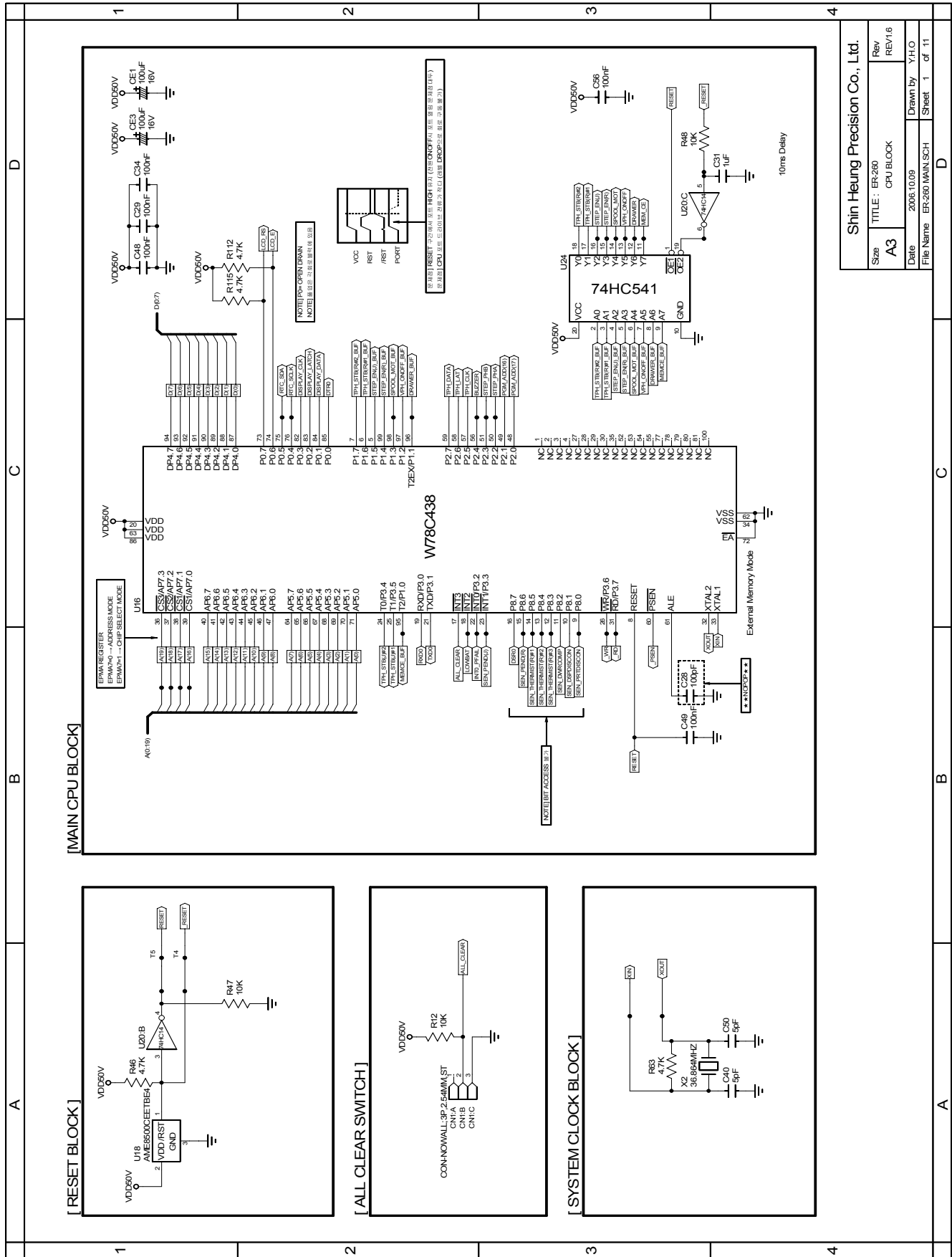
1) Serial 1port	Page 10-14
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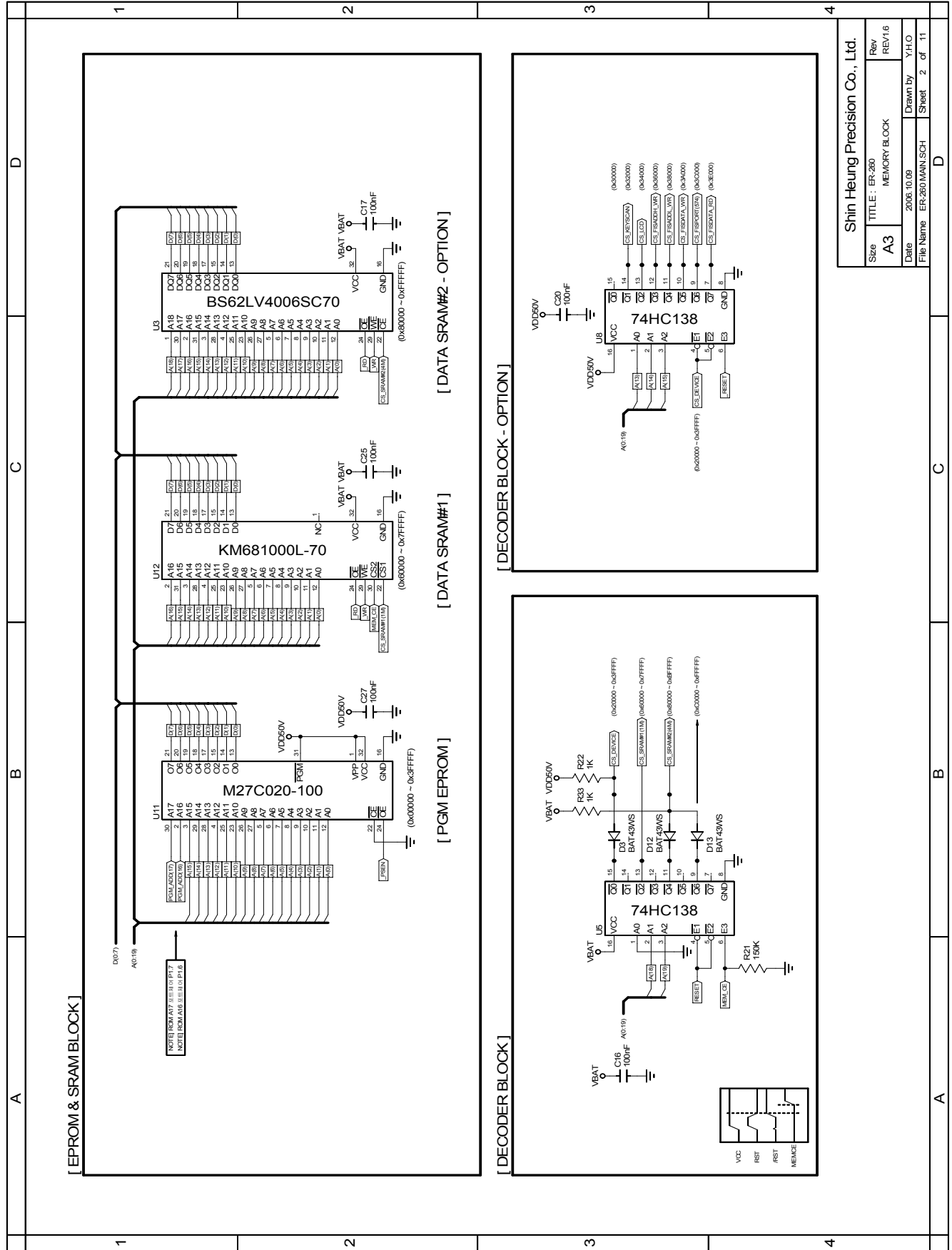
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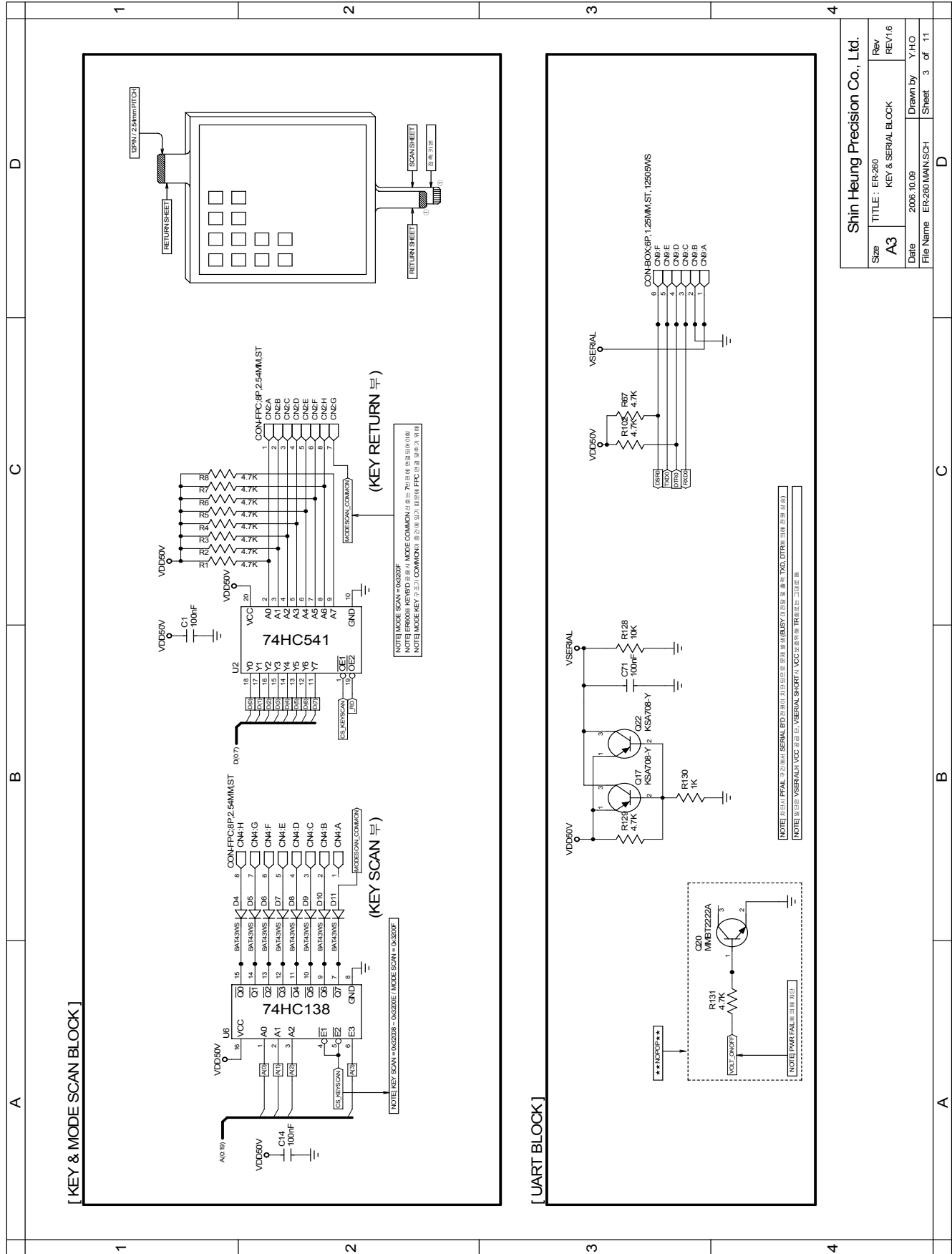
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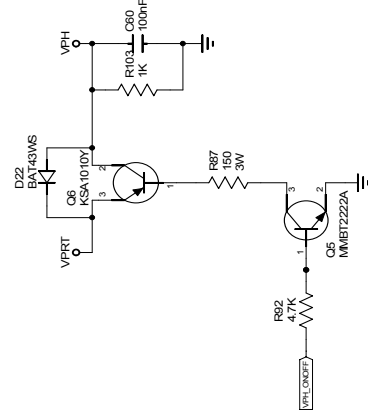




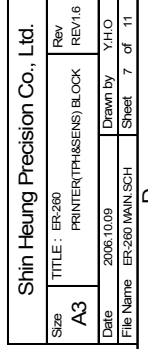
Shin Heung Precision Co., Ltd.			
Size	TITLE : ER-260	Rev	REV16
A3	MEMORY BLOCK		
Date	2006.10.09	Drawn by	Y.H.O
File Name	ER-260 MAIN SCH	Sheet	2 of 11

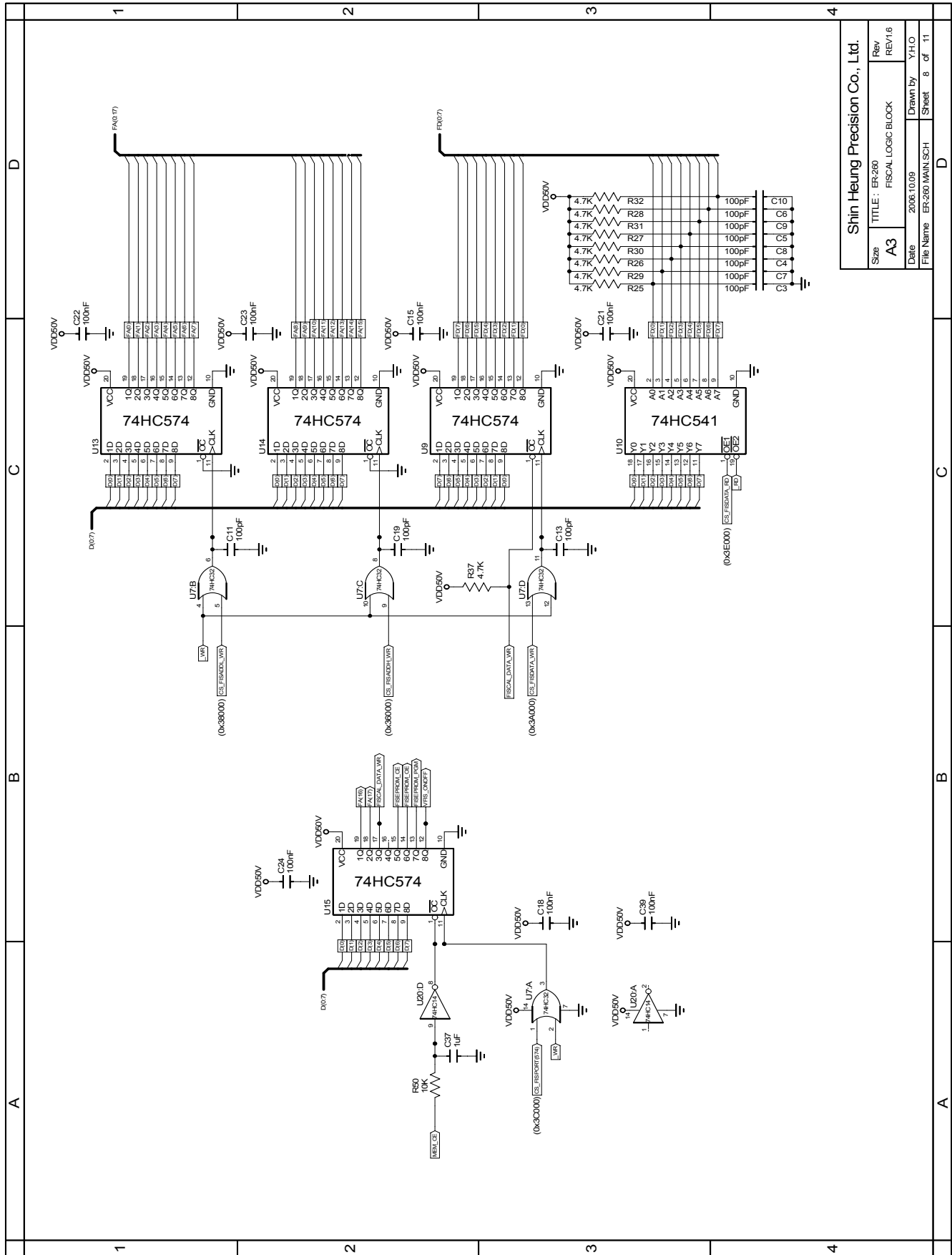




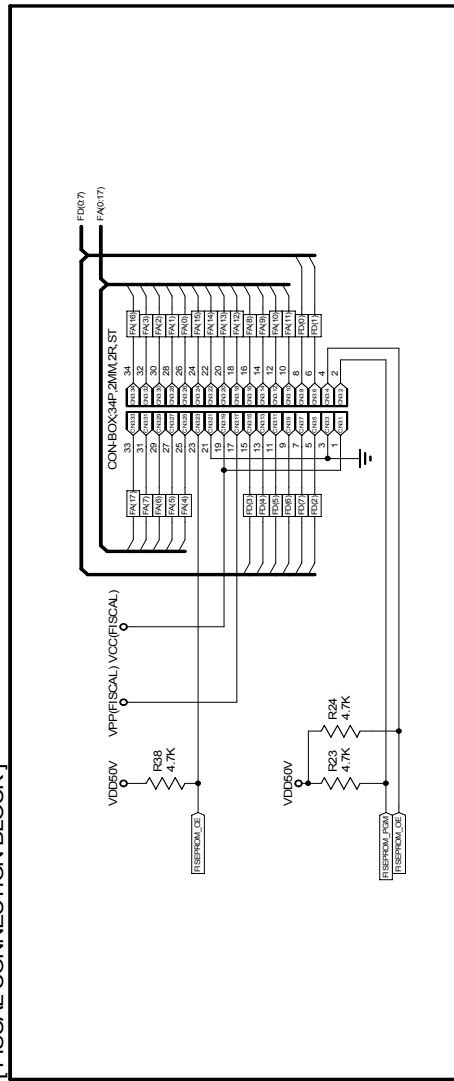


Shin Heung Precision Co., Ltd.			
Size	TITLE : ER-260 MOT DRIVER / SENSOR BLOCK		Rev REV1.6
A3			
Date	2006.10.09		Drawn by Y.H.O
File Name	ER-260 MAIN SCH		Sheet 6 of 11

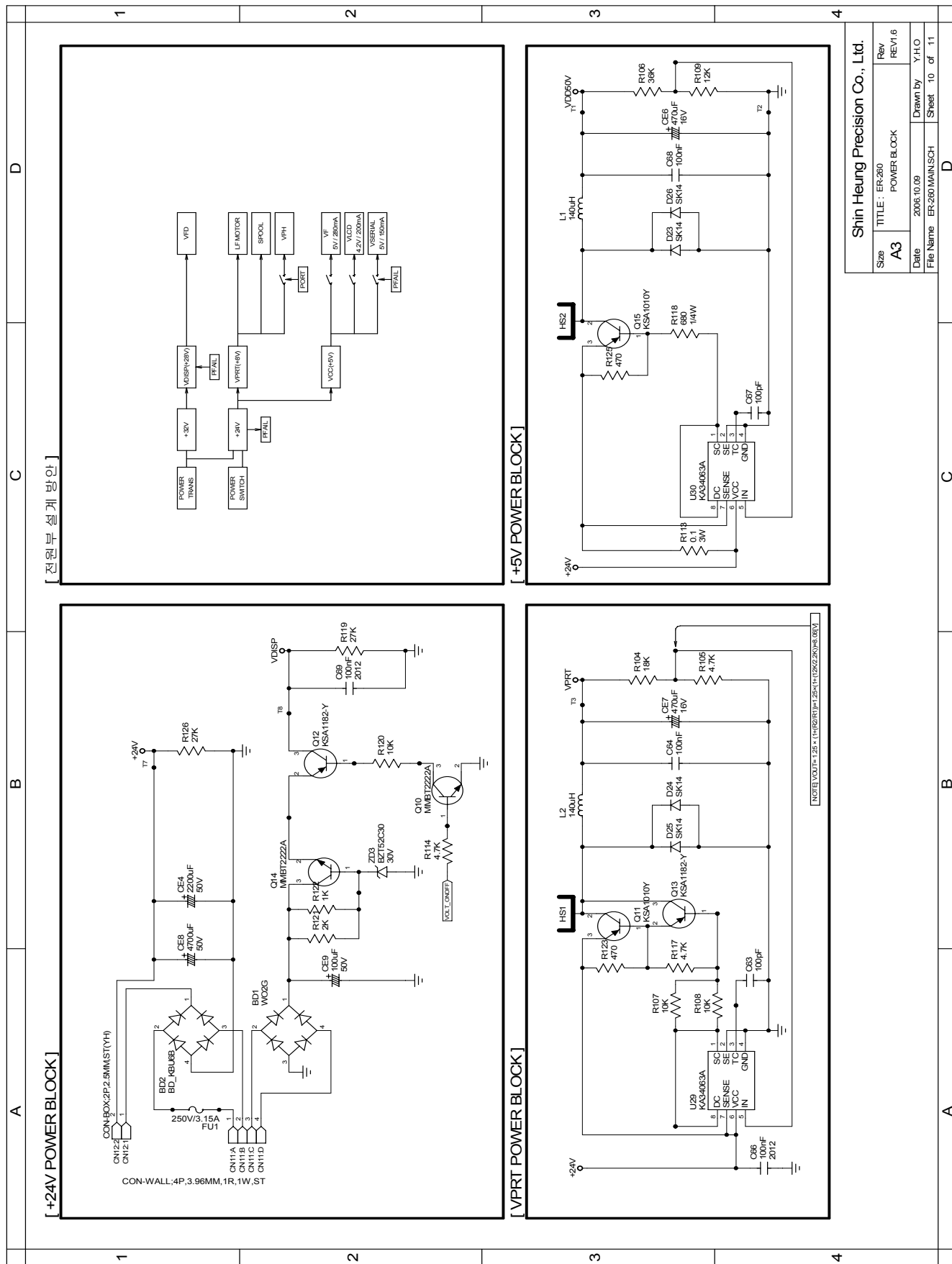




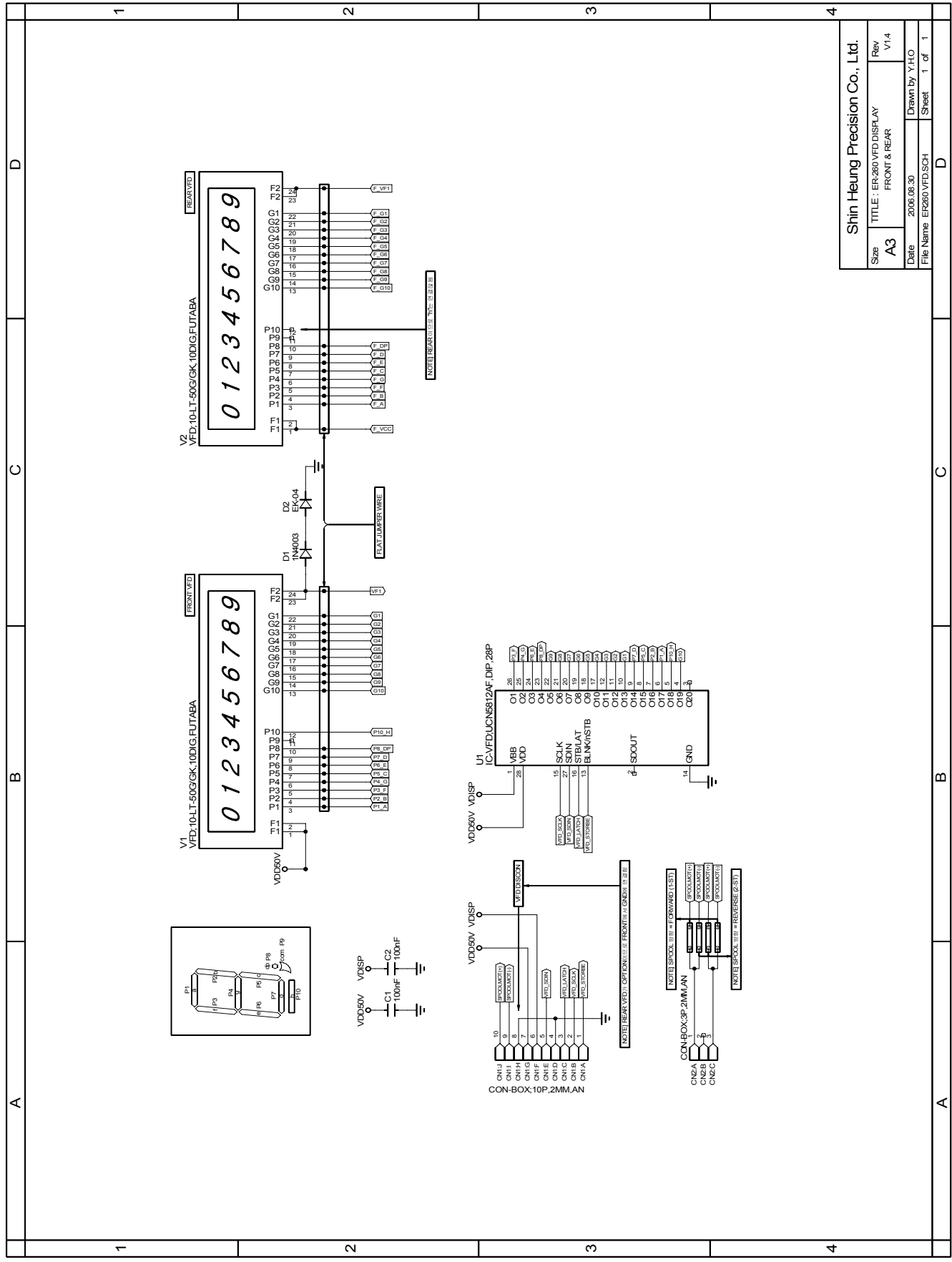
Shin Heung Precision Co., Ltd.			
Size	TITLE : ER-260	Rev	REV1.6
A3	FISCAL LOGIC BLOCK	Drawn by	Y.H.O
Date	2006.10.09	Sheet	8 of 11
File Name	ER-260 MAIN SCH		

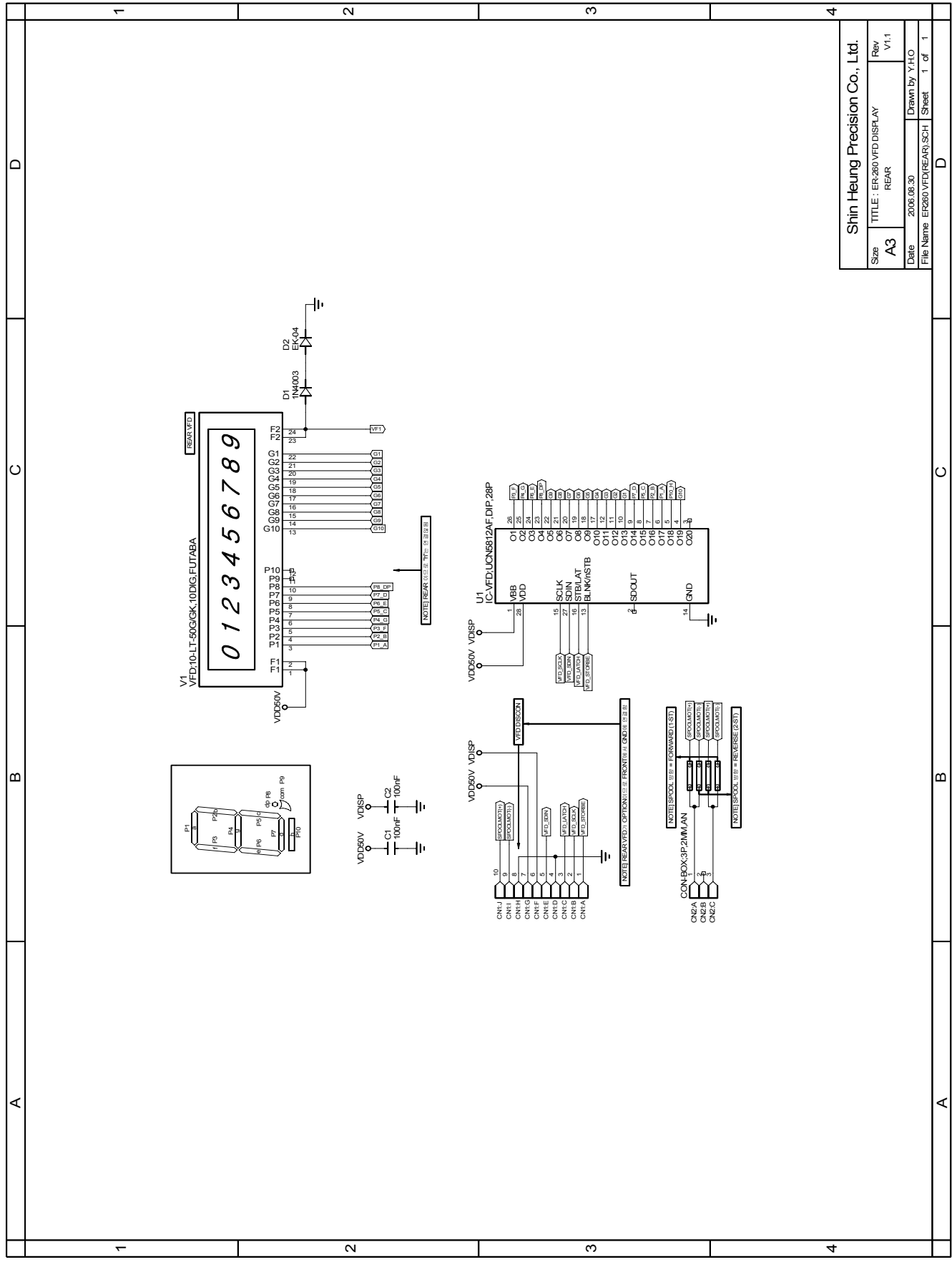


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File Name	ER-260 MAIN SCH	Sheet	9 of 11



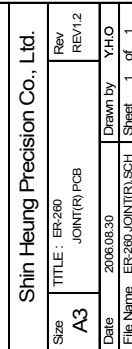
Shin Heung Precision Co., Ltd.			
Size	Rev		
A3	ER-260	POWER BLOCK	
Date	2006.10.09	Drawn by	Y.H.O
File Name	ER-260 MAIN SCH	Sheet	10 of 11



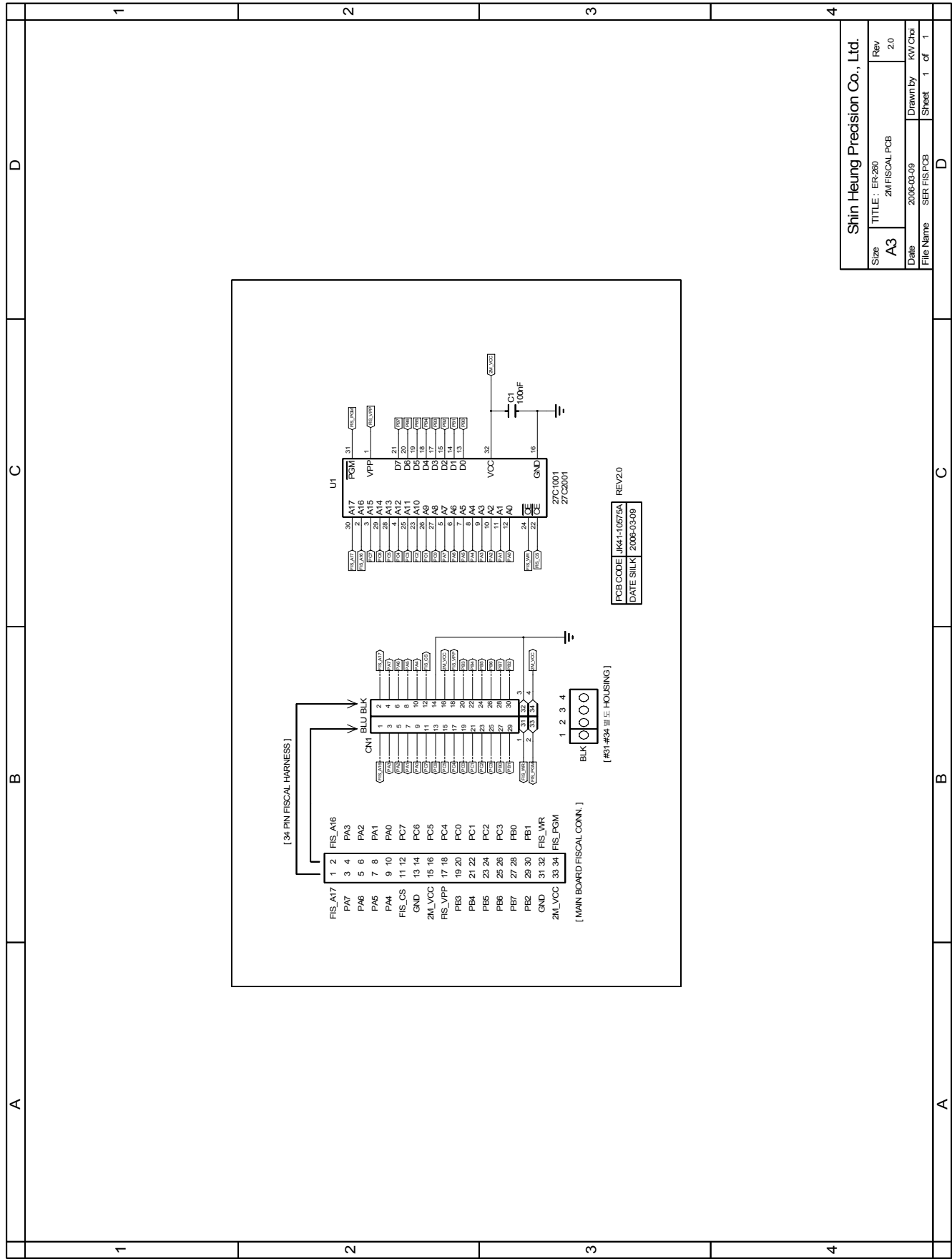


Shin Heung Precision Co., Ltd.			
Size	A3	Rev	V1.1
Title	ER-260 VFD DISPLAY		
Date	2006.08.30	Drawn by	Y.H.O
File Name	ER260 VFD(REF)SCH	Sheet	1 of 1









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